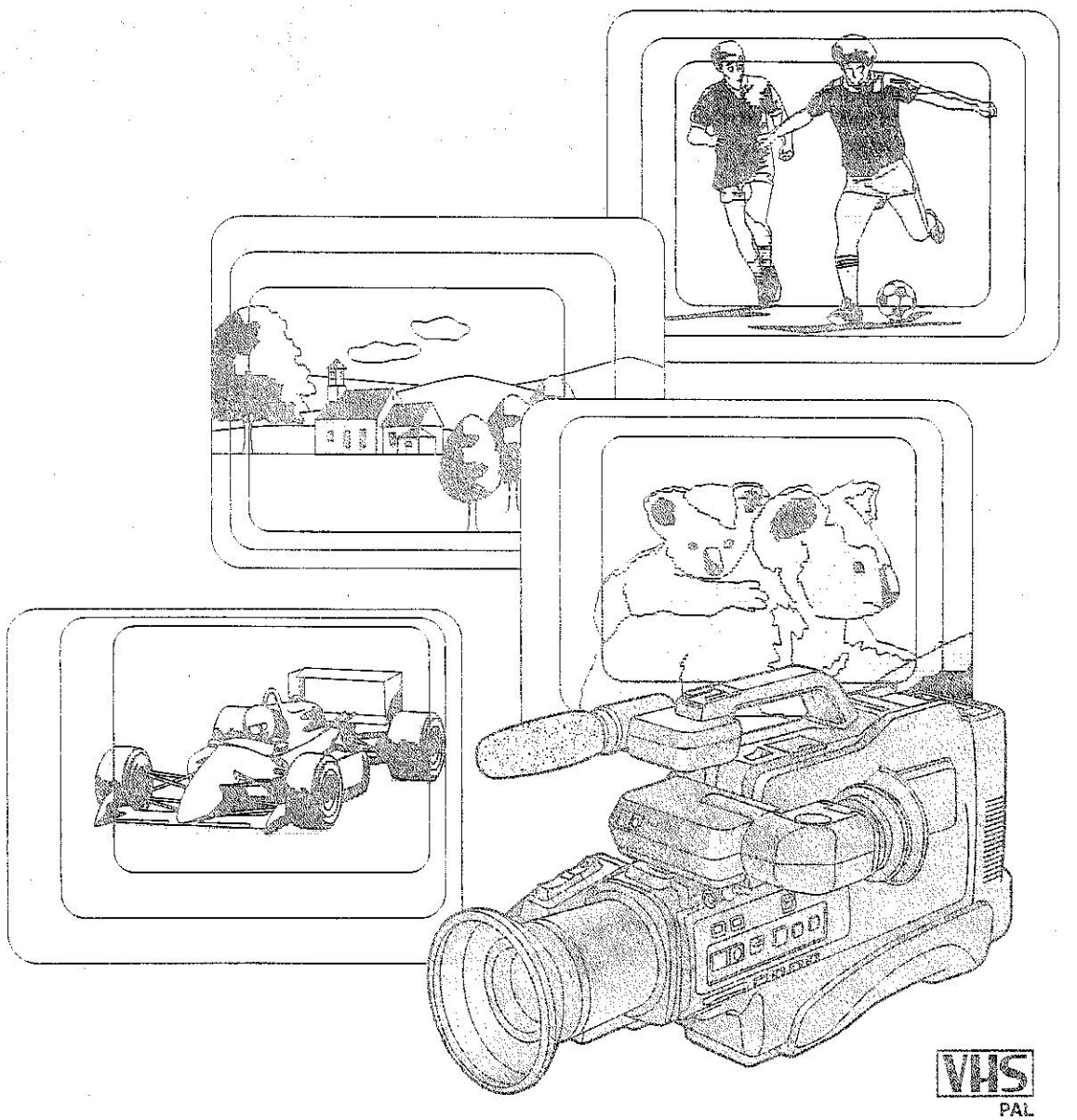
Panasonic

VHS Movie

NV-M50A

Operating Instructions



Before attempting to connect, operate or adjust this product, please read these instructions completely.

VQT6561

Dear Customer,

We would like to take this opportunity to thank you for purchasing this Panasonic Movie Camera.

Please read these Operating Instructions carefully and keep them handy for later reference, in case you wish to look up something in the future.

Caution:
Injury or material damage resulting from any kind of use that is not in accordance with the operating procedures explained in these Operating Instructions are the sole responsibility of the user.

Information for Your Safety

IMPORTANT
Your attention is drawn to the fact that recording of pre-recorded tapes or discs or other published or broadcast material may infringe copyright laws.

WARNING
TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

VHS Movie
- The rating plate is on the bottom side or the Movie Camera.

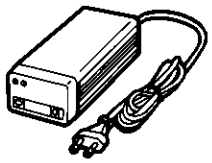
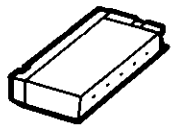
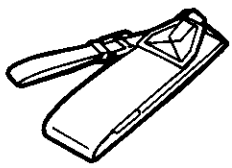
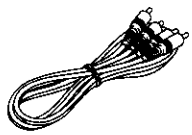
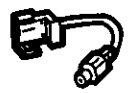
AC Adaptor
- The rating plate is on the bottom side of the unit.
- As this AC Adaptor gets hot during use, operate it in well ventilated place; do not use it in a tight enclosure.

FOR YOUR SAFETY

■ **DO NOT REMOVE THE OUTER COVER.**
To prevent electric shock, do not remove the cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

CAUTION
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the equipment manufacturer.
Discard used batteries according to manufacturer's instructions.

IF THE SUPPLY CORD OF THIS EQUIPMENT IS DAMAGED, IT MUST BE REPLACED BY THE SPECIAL CORD.

1. 	2.	3. 
4. 	5. 	6. 

Checklist for the Standard Accessories

1. **AC Adaptor**
   For supplying power to the Movie Camera or for charging the Battery Pack

2. **DC Input Cable**
   For connection to the AC Adaptor
   This cable is only for this Movie Camera.

3. **Battery Pack**
   For supplying power to the Movie Camera

4. **Shoulder Strap**

5. **Audio/Video Cable**
   For connection to a TV set

6. **Battery Pack Charging Connector**
   To recharge the Battery Pack, connect it to the AC Adaptor with this connector.

CAUTION: **TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE ONLY THE RECOMMENDED ACCESSORIES.**

Information for your safety

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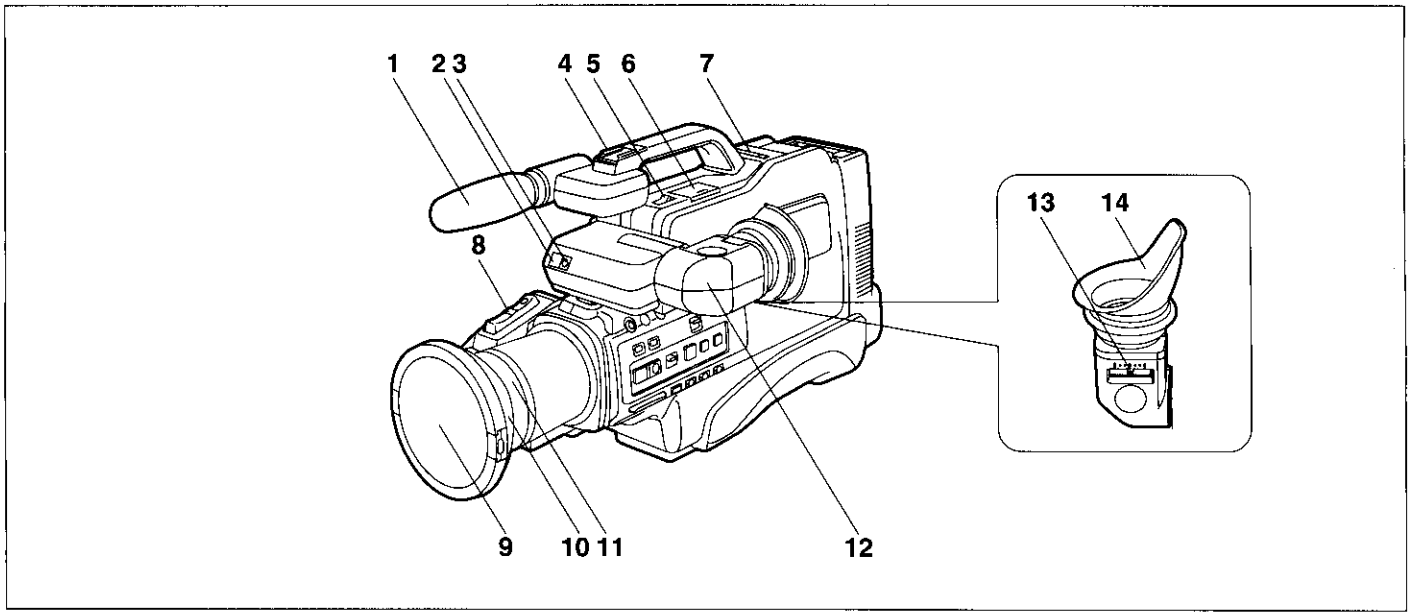


Controls and Functions

1 Built-in Microphone

2 White Balance Sensor Window

3 Tally Lamp
It is lit during shooting to inform the people in front of the Movie Camera that shooting is under way.

4 Accessory Shoe
Some optional accessories (External Microphone, etc.) can be attached to this Accessory Shoe.

5 Power Switch [POWER]
For turning the Movie Camera on and off.

6 General Operation Controls

7 CAMERA/VCR Selector Cover [CAMERA/VCR]

8 Zoom Buttons
Press these buttons to gradually zoom in and out.

9 Lens Cap

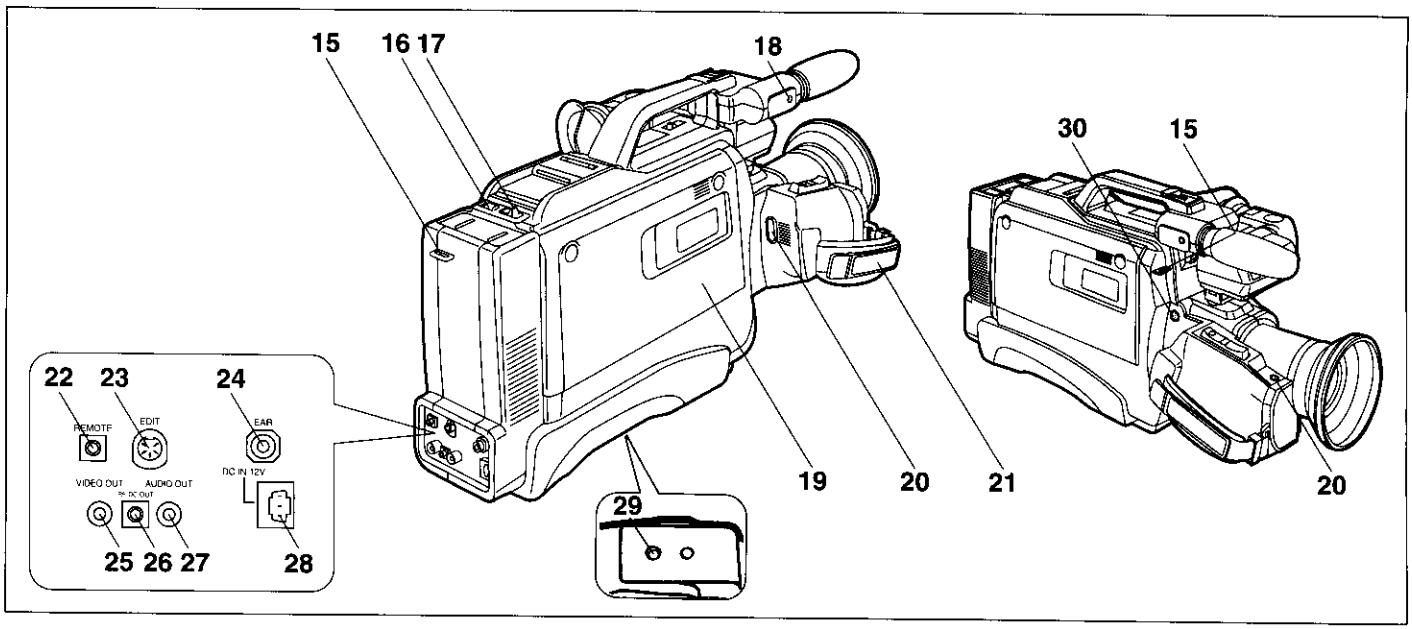
10 Lens Hood

11 Focus Ring
After selecting the manual focusing mode with the [FOCUS] Button, adjust the focus to the desired subject by turning this ring.

12 Viewfinder
The subject in front of the camera can be seen on the viewfinder screen.

13 Eyepiece Corrector Control
To adjust the Eyepiece to your eyesight, slide this control to the left or right until the picture and indications in the Viewfinder become as clear and sharp as possible.

14 Eyecup



Controls and Functions (cont'd)

15 Shoulder Strap Holders

16 Tape Eject Button [TAPE EJECT]
To insert or take out a video cassette, press this button.

17 Battery Pack Eject Lever [BATT.EJECT]
Slide this lever to the right to remove the Battery Pack.

18 External Microphone Socket [MIC]
If you want to use an external microphone, connect it to this socket (in this case, the built-in microphone will be deactivated).

19 Cassette Compartment
Insert a video cassette into this compartment.

20 Start/Stop Button
Press this button to start and stop shooting a scene.

21 Grip Belt

22 Remote Control Socket [REMOTE]
Connect a Pause Remote Control (optional) to this socket.

23 Edit Socket [EDIT]
Connect an Editing Controller, etc. to this socket.

24 Earphone Socket [EAR]

25 Video Output Socket [VIDEO OUT]

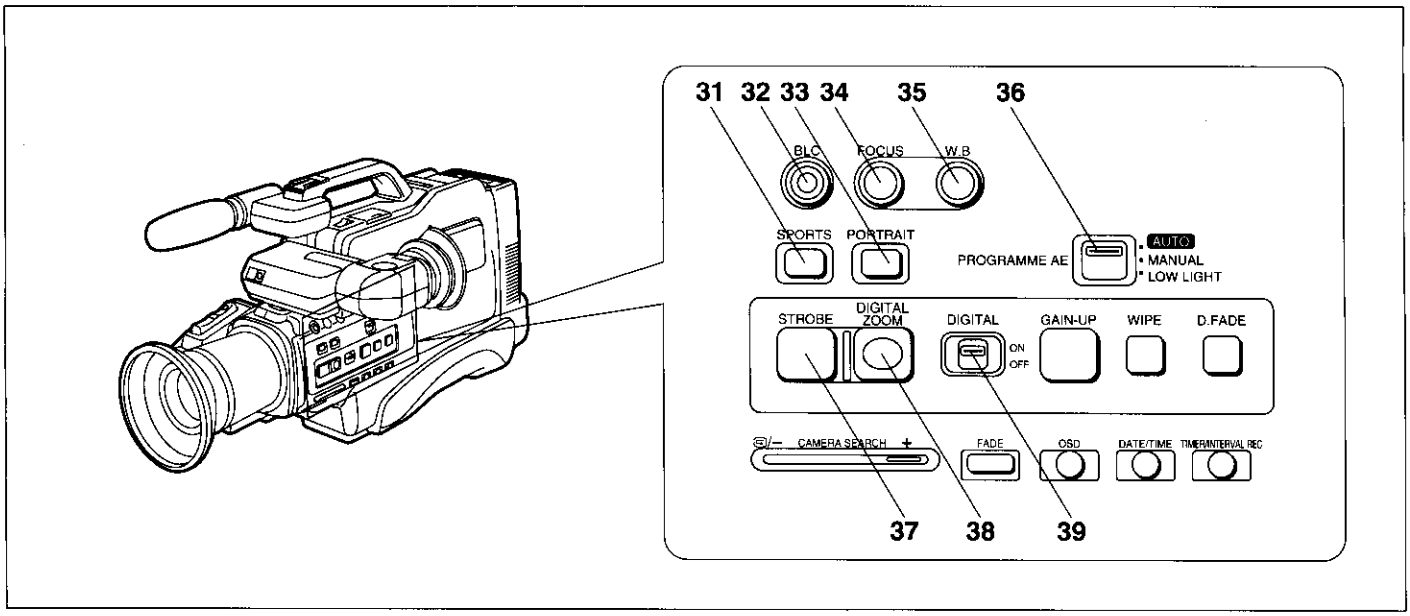
26 RF DC Output Socket [RF DC OUT] **(See page 46.)**

27 Audio Output Socket [AUDIO OUT]

28 DC Input Socket [DC IN 12 V]
Connect the DC Input Cable to this socket.

29 Tripod Receptacle
When using a tripod for stable shooting, attach the screw of the tripod to this receptacle.

30 Character Generator Socket [CHAR.GEN]
Connect a Character Generator (optional).



Controls and Functions (cont'd)

31 Sports Button [SPORTS]
Press this button to shoot fast-moving subjects.

32 Backlight Button [BLC]
Press this button to shoot backlit scenes.

33 Portrait Button [PORTRAIT]
Press this button to blur the background and the extreme foreground so that the subject will stand out sharply.

34 Focus Button [FOCUS]
Press this button to select manual focus adjustment for shooting.

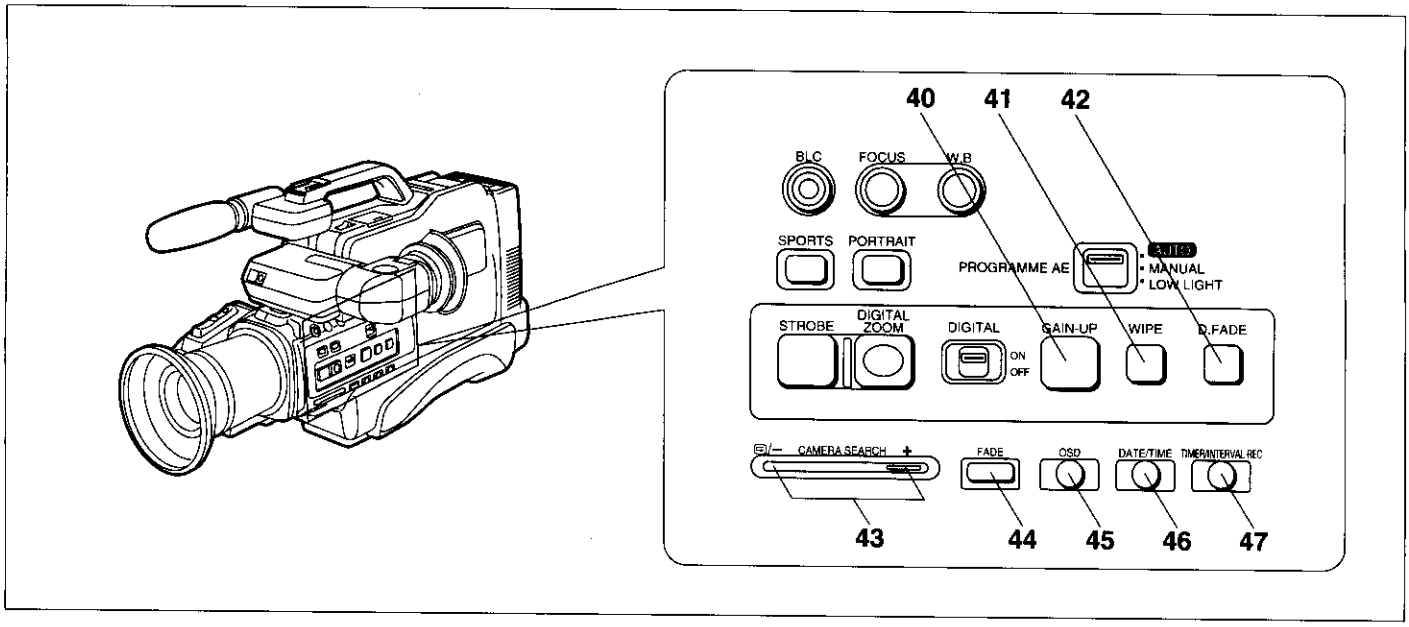
35 White Balance Button [W.B]
Press this button to select manual white balance adjustment.

36 Shooting Mode Selector Switch [AUTO/MANUAL/LOW LIGHT]
Use this selector switch to select the automatic, manual or low light shooting mode.

37 Strobe Button [STROBE]
When the [DIGITAL] Switch is set to "ON", press this button to shoot with strobe effect.

38 Digital Zoom Button [DIGITAL ZOOM]
When the [DIGITAL] Switch is set to "ON", press this button to use the Digital Zoom Function.

39 Digital Mode On/Off Switch [DIGITAL]
Set this switch to "ON" when you want to use one of the Digital Shooting Modes (Strobe, Digital Zoom, Gain Up, Wipe or Digital Fade).



Controls and Functions (cont'd)

40 Gain Button [GAIN-UP]
When the [DIGITAL] Switch is set to "ON", press this button to shoot with the Gain Up Function. When shooting under weak lighting, this function brightens up the picture.

41 Digital Wipe Button [WIPE]
When the [DIGITAL] Switch is set to "ON", press this button for a horizontal wipe transition from a still picture of the last recorded scene to the moving picture of the new scene.

42 Digital Fade Button [D.FADE]
When the [DIGITAL] Switch is set to the "ON", press this button to shoot with the Digital Fade Function.

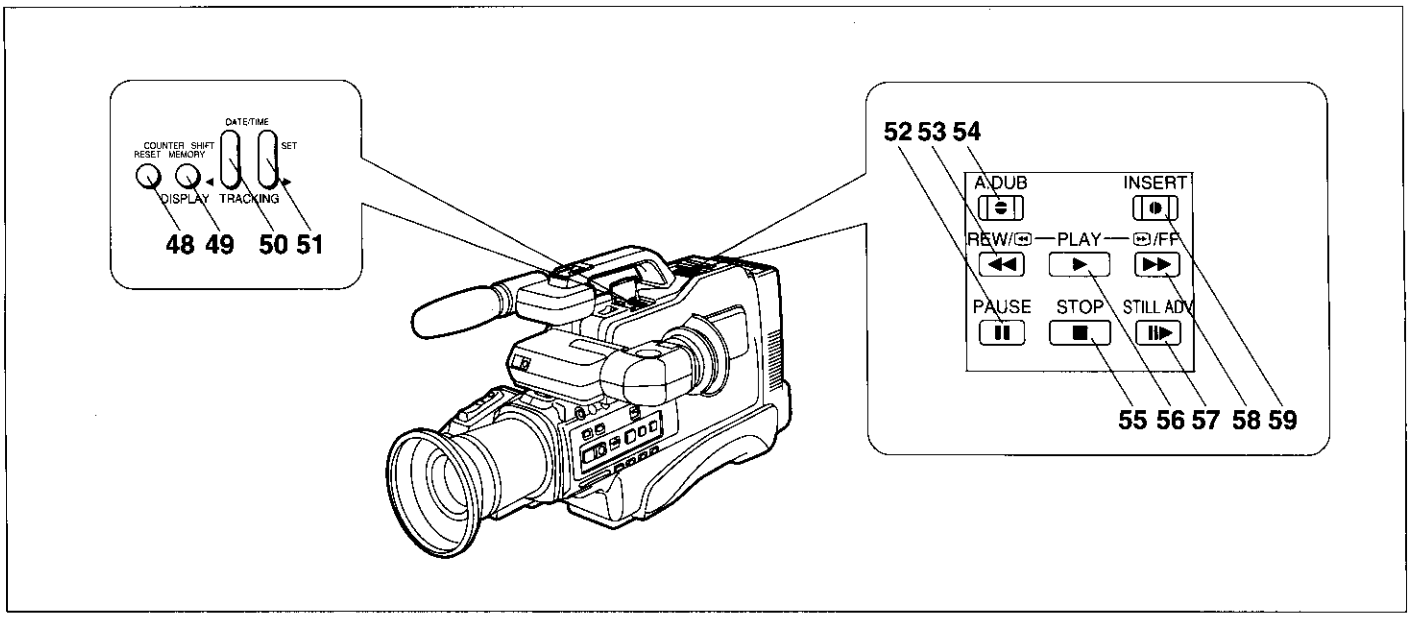
43 Camera Search Button [⏪ /– CAMERA SEARCH +]
Keep these buttons pressed to play back recorded scenes at high speed in reverse direction or at normal speed in forward direction.
To check the last few seconds of the last recorded scene, press the "–" side of the [⏪/– CAMERA SEARCH +] Button briefly.

44 Fade Button [FADE]
Press this button to fade out a scene and to fade in the following scene for a soft scene-to-scene transition.

45 On-Screen Display Button [OSD]
Press this button to make the indications in the Viewfinder disappear.

46 Date/Time Button [DATE/TIME]
Press this button to make the time and/or date appear in the Viewfinder and superimpose them onto the picture during shooting.

47 Interval Button [TIMER/INTERVAL REC]
Press this button to activate the Self-Timer and Interval Shooting Functions.



Controls and Functions (cont'd)

48 Reset Button [RESET]
Press this button to reset the tape counter to "0000".

49 Memory Button [MEMORY/DISPLAY]
Press this button to activate the Tape Counter Memory Function.

50 Tracking/Date/Time Shift Button [DATE/TIME SHIFT • ◀ TRACKING]
1) Press it to advance to the next item during the setting of the time and date.
2) Press it when you want to adjust the tracking manually.

51 Tracking/Date/Time Set Button [DATE/TIME SET • TRACKING ▶]
1) Press it to change the figures during the setting of the time and date.
2) Press it when you want to adjust the tracking manually.

52 Pause Button [PAUSE]
Press this button during playback to be able to watch a still picture.

53 Rewind/Review Button [REW/⏪]
Press this button to rewind the tape.

54 Audio Dubbing Button [A.DUB]
Press this button to add new sound on a recorded tape with the Audio Dubbing Function.

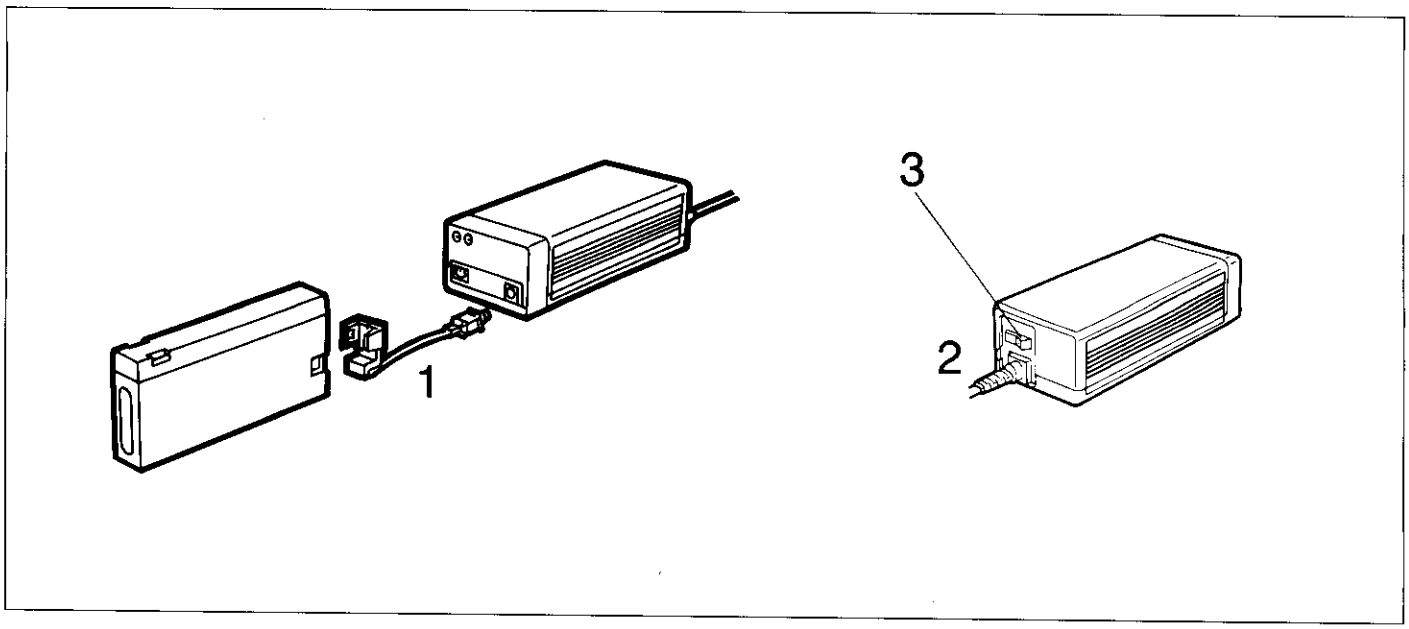
55 Stop Button [STOP]
Press this button to stop the playback.

56 Play Button [PLAY]
Press this button to start the playback.

57 Still Advance Button [STILL ADV]
After pressing the Pause Button, press this button to advance the still picture frame by frame.

58 Fast Forward/Cue Button [⏩/FF]
Press this button to wind the tape forward.

59 Insert Button [INSERT]
Press this button to insert new scenes on a previously recorded cassette tape.



Using the Battery Pack

■ Charge the Battery Pack

1 **Connect the Battery Pack and the AC Adaptor with the Battery Pack Charging Connector.**

2 **Connect the Power Cable of the AC Adaptor to the Mains.**

3 **Turn the AC Adaptor on.**

Notes:

- Charge the Battery Pack within a temperature range of 10°C–35°C.
- It is not possible to charge the Battery Pack when it is inside the Movie Camera. To charge the Battery Pack, take it out from the Movie Camera and connect it to the AC Adaptor.

Charging Indication Lamp:

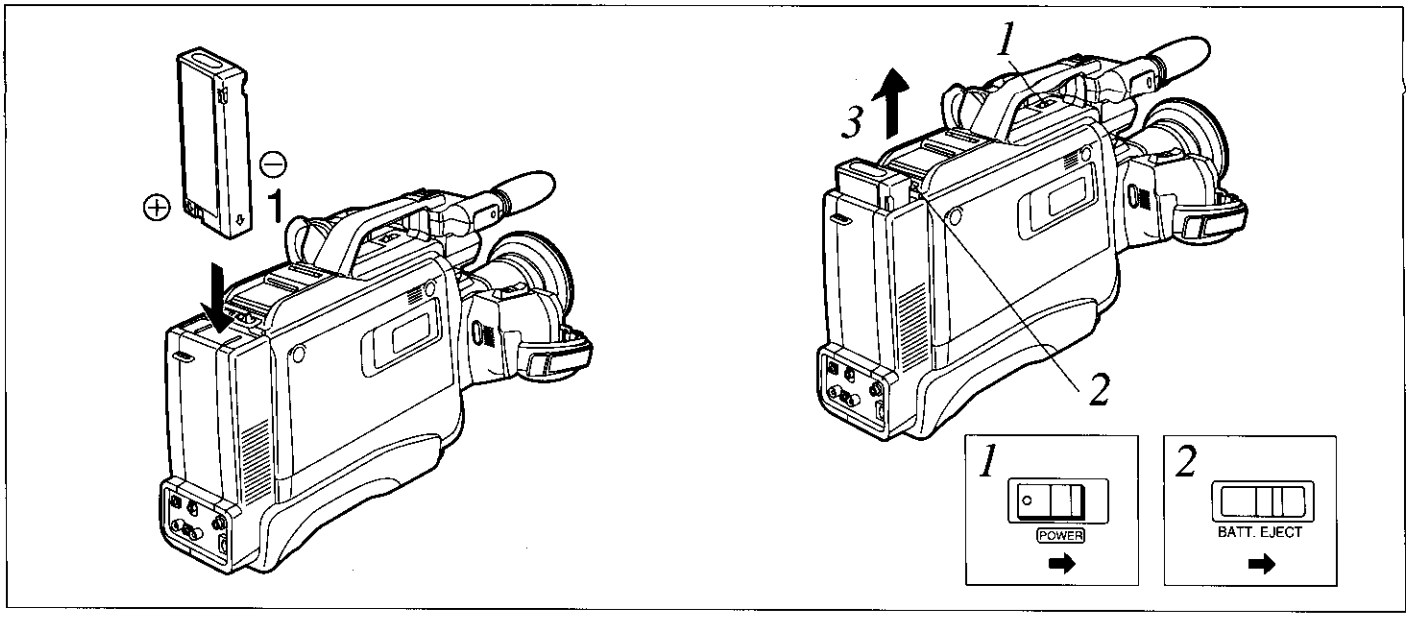
When charging is started, the red lamp lights up. When about 45 minutes of charging time remain, the lamp will change to green. The Charging Indicator will go out about 100 minutes affer charging starts. However, the Battery Pack should be charged at least 3 hours for extended use.

Operation Time:

With a fully charged Battery Pack (VW-VBF2E), the Movie Camera can be used (in record mode only) continuously for approx. 120 minutes at 25°C. However, depending on how often the various functions listed below are used, and depending on the shooting conditions, the actual operation time may be considerably shorter.

- Shooting start/stop
- Auto focus
- Zoom function
- Digital function
- Playback, fast forward, rewind, and other operations
- Use of the Movie Camera in low temperature

Therefore, it is recommended to take along a charged spare Battery Pack.



Using the Battery Pack (cont'd)

■ How to Insert the Battery Pack

1 **Insert the Battery Pack until it locks with a click.**

Note:
Insert the Battery Pack with its + side facing the rear of the Movie Camera.

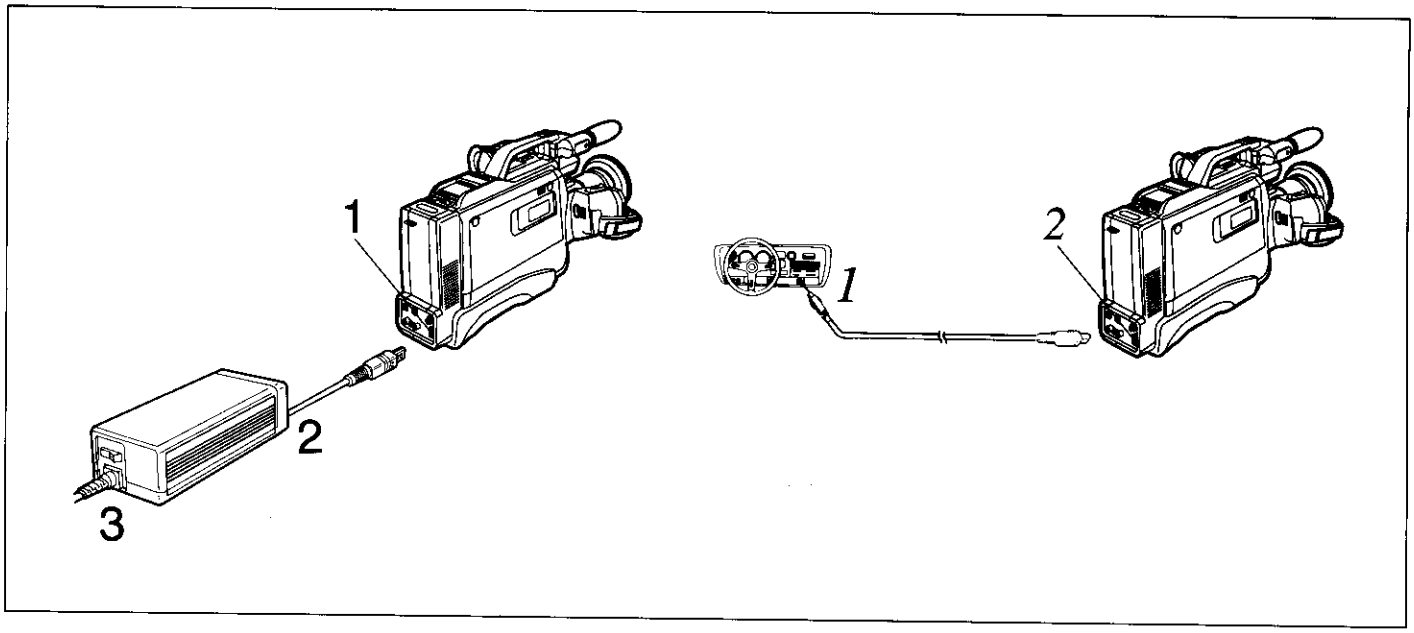
■ How to Remove the Battery Pack

1 **Turn the Movie Camera off.**

2 **Slide the [BATT. EJECT] Lever in the direction of the arrow.**

3 **Pull out the Battery Pack.**

Caution:
If the Battery Pack is removed during recording or playback, the tape remains wound around the video head cylinder and could become damaged.
This is also the case during the loading and unloading of the tape.



Using the AC Adaptor or the Car Battery Cord (optional)

■ How to Use the AC Adaptor

1 **Connect the DC Input Cable to the DC Input Socket on the Movie Camera.**

2 **Connect the other end of the cord to the DC Output Socket on the AC Adaptor.**

3 **Connect the Mains Cable of the AC Adaptor to the mains.**

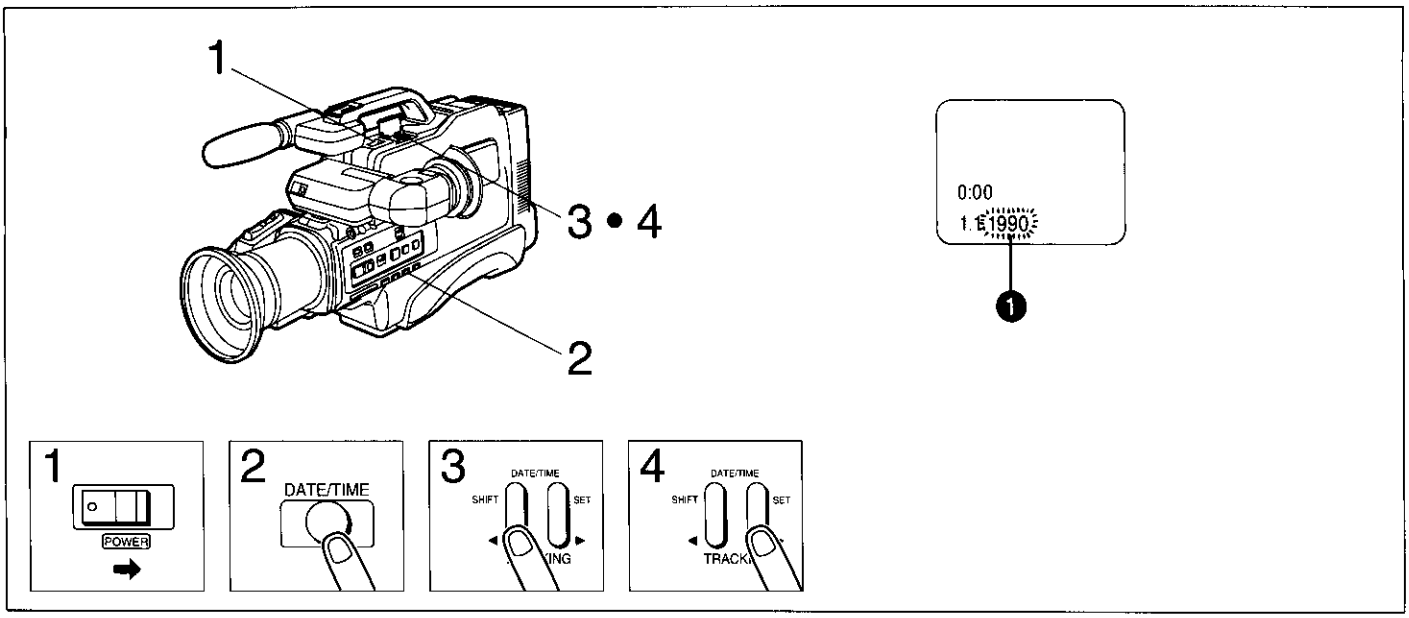
■ How to Use the Car Battery Cord (optional)

1 **Start the engine and then plug the Car Battery Cord into the Cigarette Lighter Socket.**

2 **Connect the other end of the cord to the DC Input Socket on the Movie Camera.**

Notes:

- The Car Battery Cord can only be used with 12 V DC negative-grounded vehicles.
- Do not start the car engine while the Movie Camera is powered by the car battery.



Setting the Clock

■ How to Set the Date and Time

At the time of purchase, the clock does not show the correct time and must first be adjusted.

1 Turn the Movie Camera on.

2 Press the [DATE/TIME] Button.

3 Keep pressing the [SHIFT] Button for more than about 2 seconds.

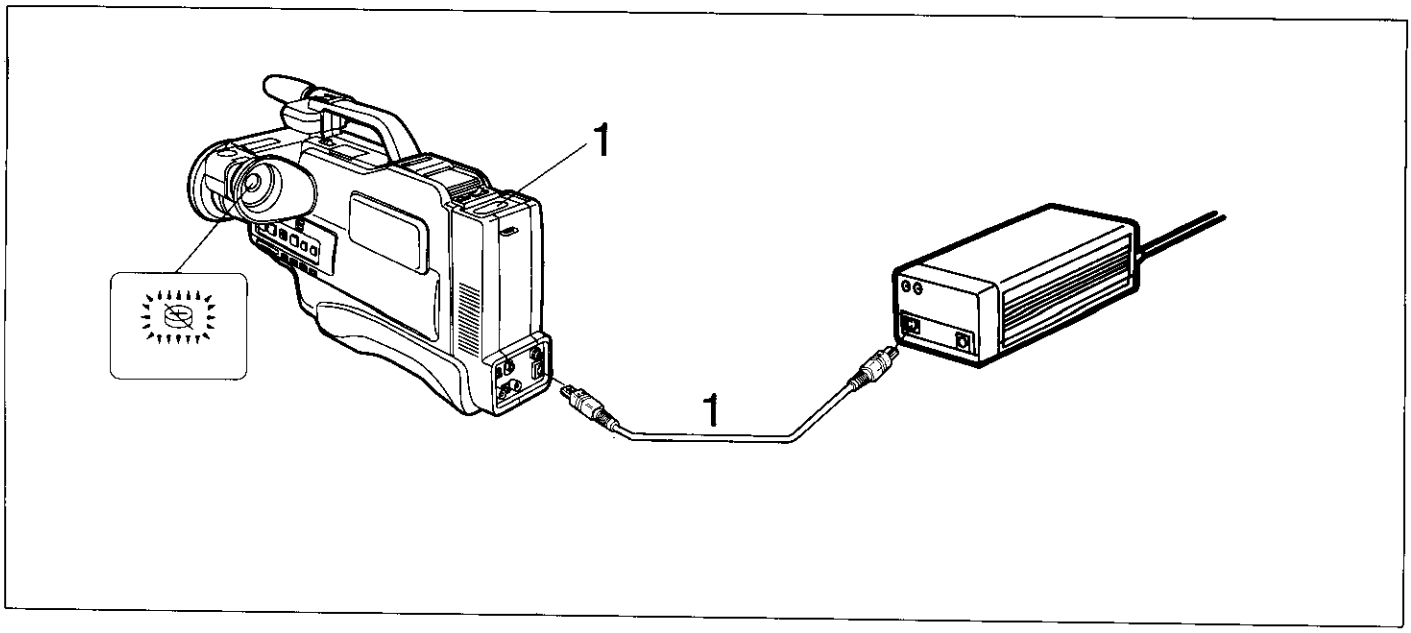
- The year portion ❶ of the Date/Time Indication starts to flash.
- The flashing portion of the Date/Time Indication can be changed with the [SHIFT] Button in the following order:

→Year→Month→Day→Hour→Minute→" "→

4 Press the [SET] Button to change the figures.

Year: **1990**→1991→ ..... →2089→**1990**→...
Month: **1**→2→ ..... →12→**1**→...
Day: **1**→2→ ..... →31→**1**→...
Hour: **0**→1→ ..... →23→**0**→...
Minute: **00**→01→ ..... →59→**00**→...

- Repeat procedures **3** and **4** until all items have been set correctly.
- Once the date and time are set, press the [SHIFT] Button in response to an accurate time source so that the clock begins to function.



Setting the Clock (cont'd)

■ The Built-in lithium battery

A built-in rechargeable lithium battery maintains the operation of the built-in clock when the Movie Camera is turned off. When the Movie Camera is in operation, this battery is recharged automatically.
However, if the Movie Camera is not used for a very long time, the lithium battery can become exhausted. In this case, the Indication "⊗" in the Viewfinder flashes and the date and time return to the initial Indication "1.1.1990".

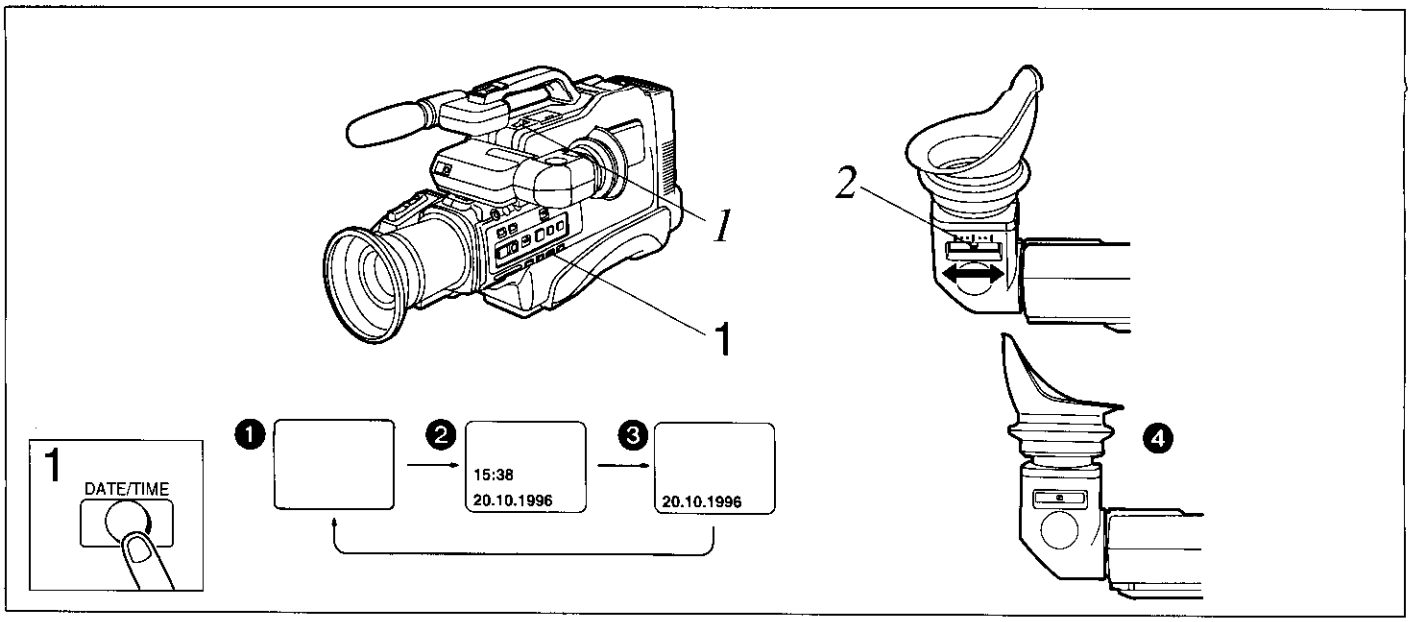
■ How to Recharge the Built-In Lithium Battery

If the Indication "⊗" in the Viewfinder flashes for approx. 10 seconds when turning the Movie Camera on, the lithium battery needs to be recharged as follows:

1 Connect the Movie Camera to the AC Adaptor or insert the Battery Pack into the Movie Camera.

2 Leave the Movie Camera for 20 hours.
The Movie Camera does not need to be turned on.

- When the lithium battery is fully charged, it can maintain the operation of the clock for approx. one year.



Recording the Date and Time during Shooting

During shooting, the Date/Time Indication displayed in the Viewfinder will also be recorded.

1 Press the [DATE/TIME] Button.

- At each press of the [DATE/TIME] Button, the Date/Time Indication in the Viewfinder can be changed in the following order:

❶ ❷ ❸

No indication → 15:38 20.10.1996 date and time → 20.10.1996 date only →

Adjusting the Eyepiece Corrector

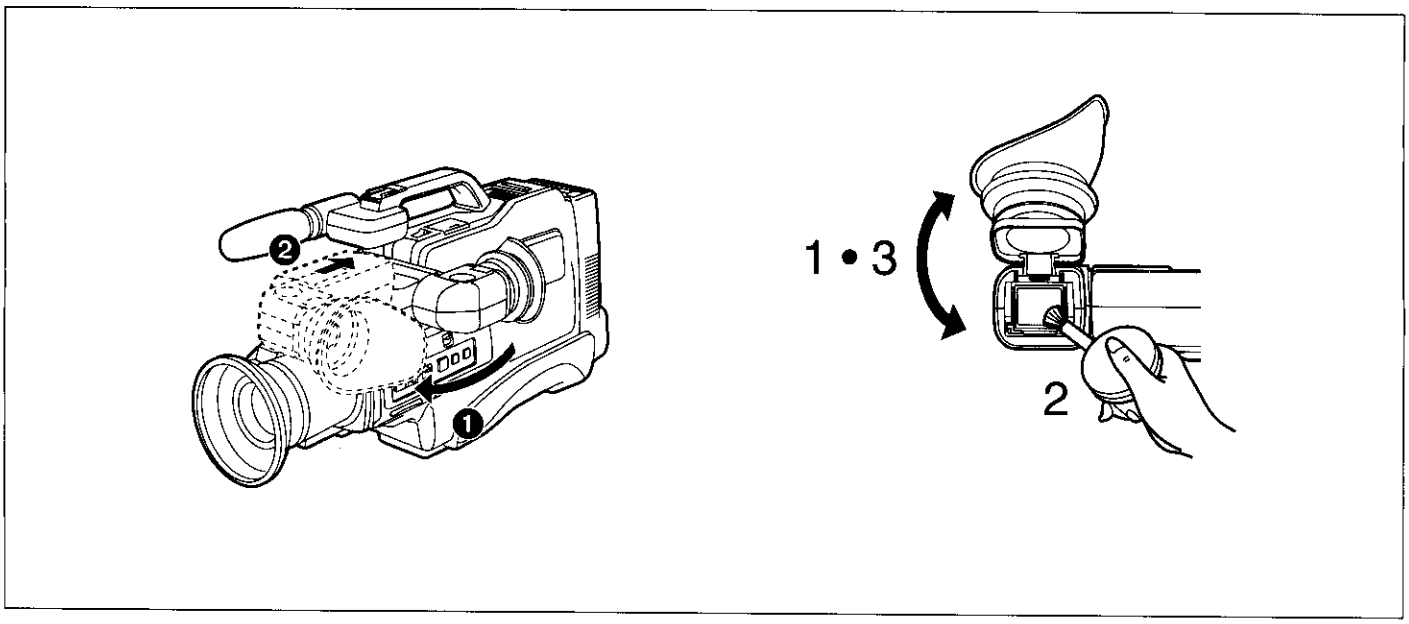
1 Turn the Movie Camera on.

2 Slide the Eyepiece Corrector Control to the right or left until the indications in the Viewfinder can be seen clearly.

- With the Eyepiece Corrector Control, the Eyepiece can be adjusted to your eyesight.

Notes:

- Do not apply any pressure to the Viewfinder except when folding it up, raising, lowering and folding down.
- For viewing the picture in the Viewfinder with the left eye, remove the Eyecup and attach it with its longer side facing left ❹.



Viewfinder

■ Setting the Viewfinder to its Shooting Position

Turn the Viewfinder backward by 90° so that the Eyecup faces backward.

- The angular part of the Viewfinder can be turned upward and downward by 90° each.
- To be able to watch the picture in the Viewfinder without holding the Viewfinder close to the eye, swing up the Eyecup.
- By pulling on the Viewfinder it can be extended further outside to a position that is most comfortable for shooting.

■ Returning the Viewfinder to its Original Position

❶ Turn it forward toward the Lens.

❷ Retract the Viewfinder by pushing it back toward its base.

Note:
Never aim the Movie Camera with its Viewfinder or Lens directly at the sun; this could damage internal parts of the unit.

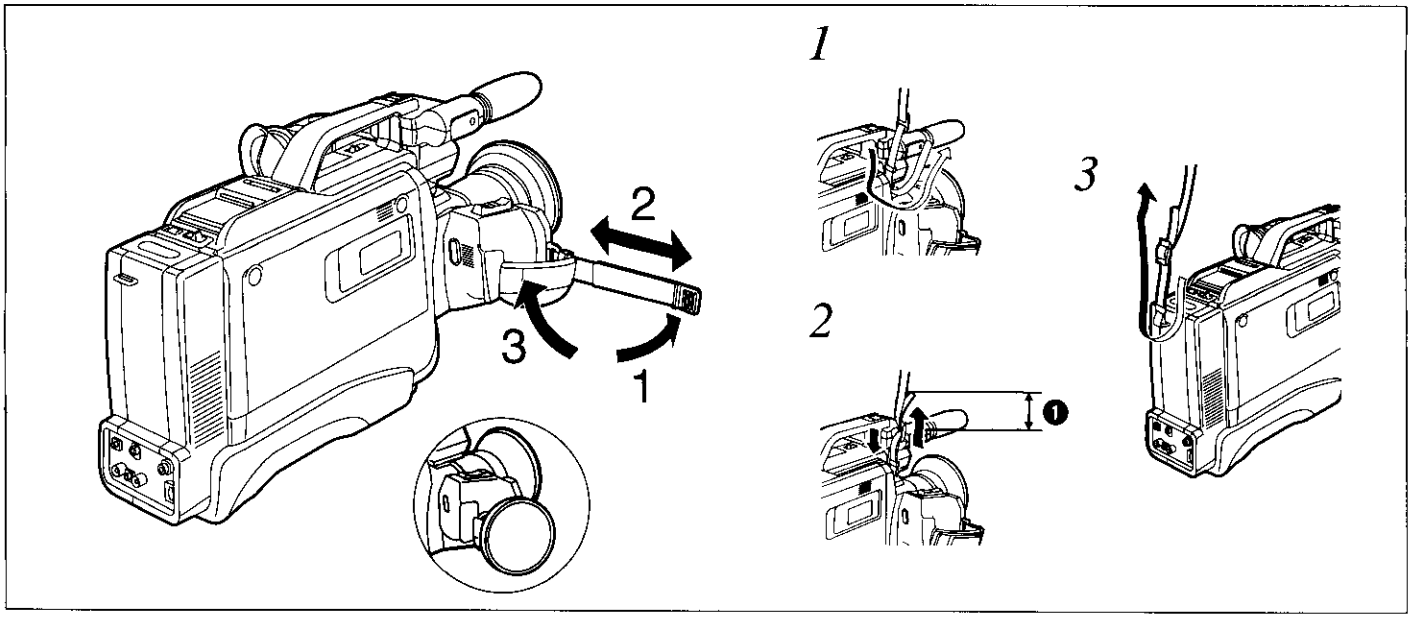
Cleaning

1 **Swing up the eyecup.**
2 **Remove dust with a blower brush.**
3 **Swing down the eyecup.**

- Clean the lens only with a blower brush (used for photo cameras) or special lens cleaning tissue (used for glasses and cameras).
- Wipe the Movie Camera with a clean, dry cloth. Never use cleaning fluid or other chemicals.

■ Cautions for Cleaning

Do not use benzine, thinner or other chemicals for cleaning, because they could change the colour and damage the surface of the camera body.
When using a chemically treated cloth for cleaning, carefully follow the instructions for its use.



Adjusting the Grip Belt

■ **Adjusting the Length of the Grip Belt**

The length of the Grip Belt should be adjusted so that the Grip fits comfortably into the palm of your hand and the Start/Stop Button and the [W] and [T] Zoom Buttons can easily be pressed with the fingertips.

1 **Unfasten the velcro tape closure.**

2 **Adjust the length to the size of your hand.**

3 **Fasten the velcro tape closure.**

Note:

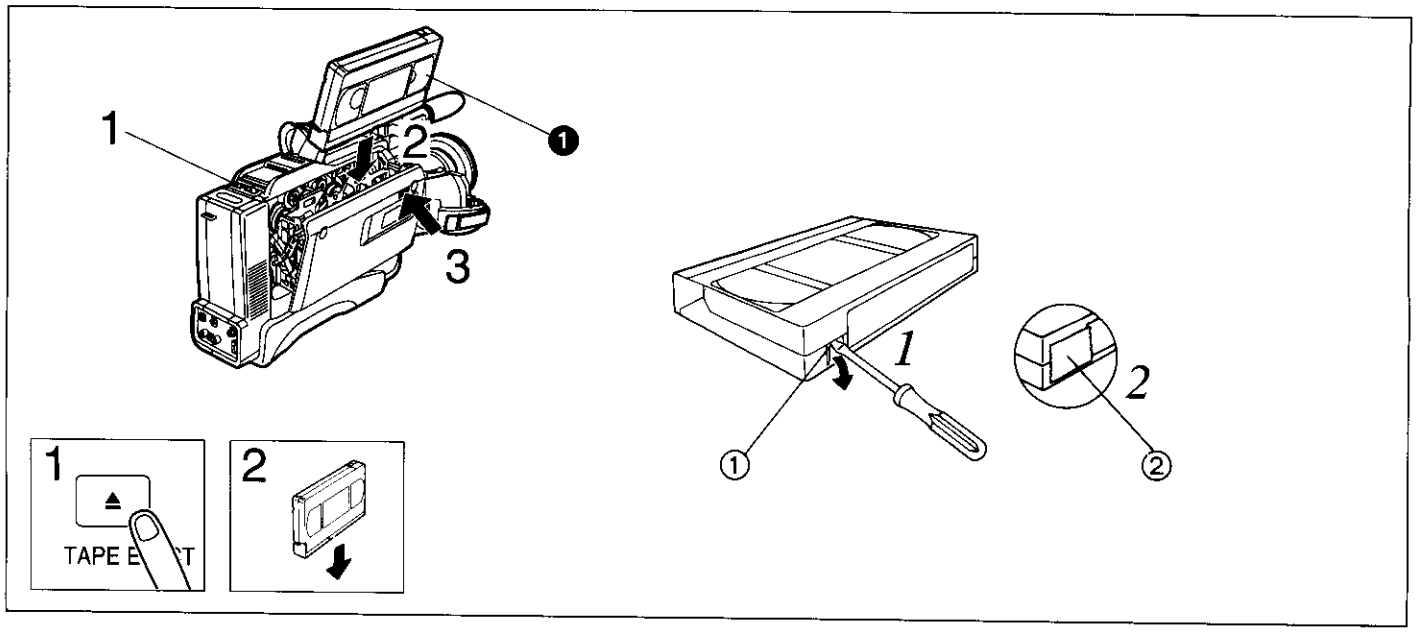
- Attach the Lens Cap to the Grip Belt. (Hook the clip part on the back of the Lens Cap onto the Grip Belt.)

Attaching the Shoulder Strap

1 **Pull the end of the Shoulder Strap through the Shoulder Strap Holder.**

2 **Securely attach the end of the Shoulder Strap. (❶ More than 2 cm)**

3 **Attach the other side in the same way.**



Inserting the Video Cassette

■ How to Insert the Video Cassette

1 Press the [TAPE EJECT] Button.
- After a few seconds, the Cassette Compartment Cover opens.

2 Insert the video cassette with the cassette window ❶ facing outside.

3 Close the Cover until it locks with a click.

■ How to Eject the Video Cassette

Make sure that power is supplied to the Movie Camera.

1 **Press the [TAPE EJECT] Button.**

2 **Pull out the Video Cassette.**

3 **Close the Cover until it locks with a click.**

■ Preventing Accidental Erasure of Recordings

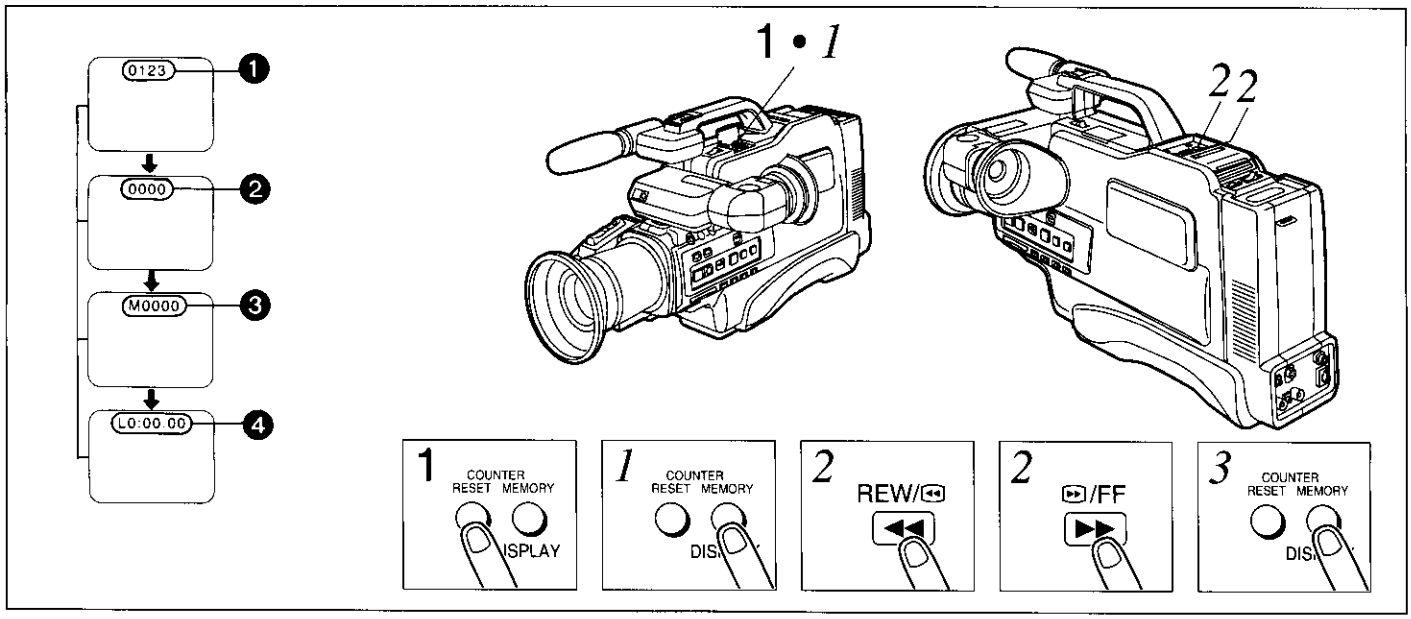
When recording on a previously recorded tape, the previously recorded contents will be erased and replaced by the new recording. An important recording can be protected against accidental erasure, by breaking out the tab ①. If the tab is removed, recording on this Video Cassette is no longer possible.

■ How to Break off the Tab

1 **Break off the tab with a screwdriver in the direction of the arrow.**

■ How to Record Again onto a Video Cassette with Removed Tab

2 **Cover the hole of tab firmly with two layers of adhesive tape ②.**



Using the Tape Counter Indication

The Tape Counter Indication ❶.

■ How to Reset the Tape Counter to "0000"...

1 Press the [RESET] Button.
- The Tape Counter is reset to "0000" ❷.

■ How to Search for the Tape Position "0000" After Shooting or Playback...

1 **Press the [MEMORY/DISPLAY] Button.**
- The "M" Indication ❸ appears in the Viewfinder next to the Tape Counter Indication.

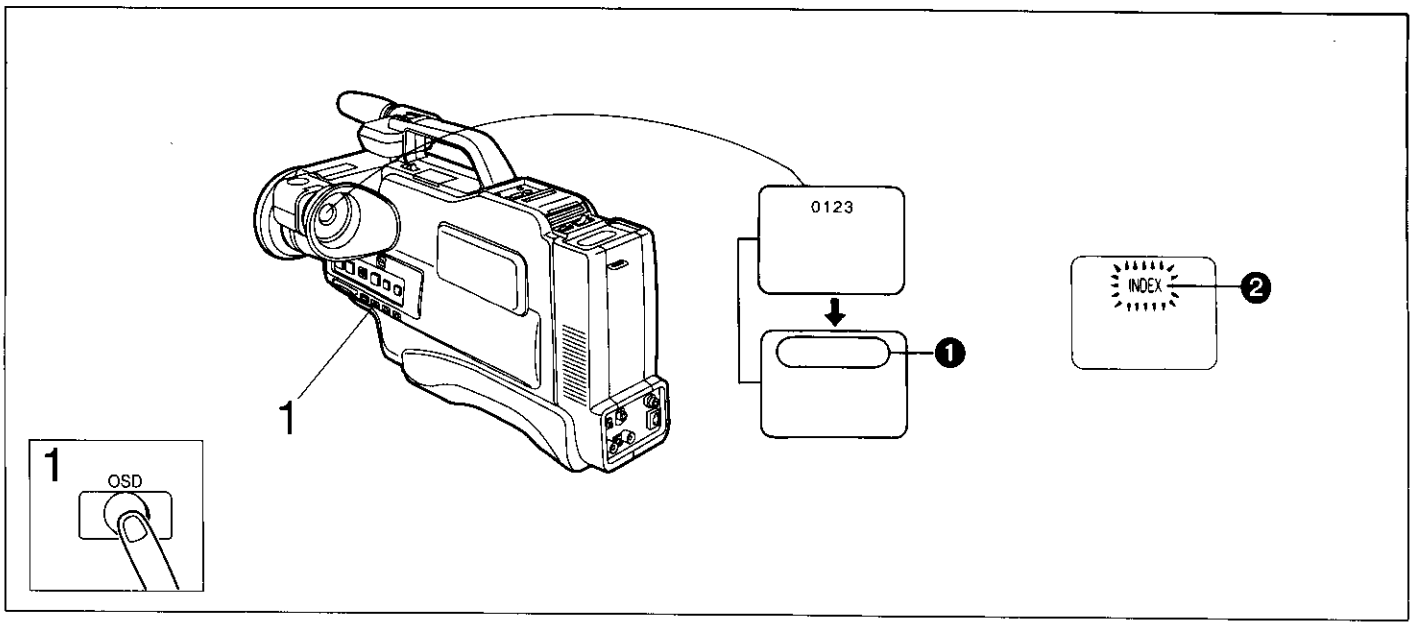
2 **Press the [REW/◀◀] or [▶▶/FF] Button.**
- The tape stops automatically at about the point where the Tape Counter reads "M 0000".

■ How to Make the Lap Time Counter Indication Appear

3 **Press the [MEMORY/DISPLAY] Button again.**
The Lap Time Counter Indication "L 0:00.00" (real time) ❹ appears.
- The Lap Time Counter counts up only during recording.

Note:
When fast forward or rewind to "M 0000" position, the tape counter may not read exactly "M 0000" when the tape stops. This is not a malfunction.

■ To Cancel the Memory Function...
Press the [MEMORY/DISPLAY] Button twice.



Using the On-Screen Display Function

■ How to Turn off the Indications in the Viewfinder

1 Press the [OSD] Button.

- The indications in the Viewfinder disappear ❶ except the Warning and Alarm Indications, the Date/Time Indication and the Manual White Balance Indications.

■ To Return to the Initial Mode...

Press the [OSD] Button again.

Index Signals (VISS)

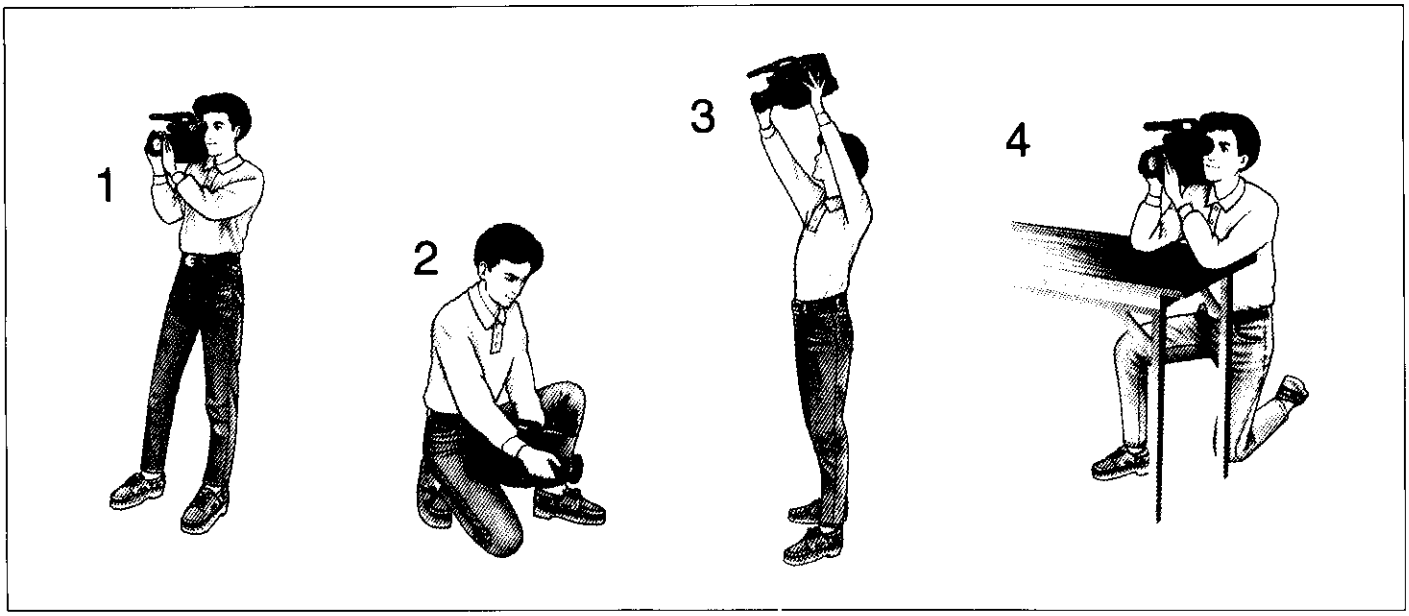
The index signals make possible the use of the VHS Index Search or the Intro Scan Function when playing back the tape on a VCR equipped with these functions.

An Index signal is recorded automatically in the following cases:

- When shooting is started for the first time after attaching the Battery Pack.
- When shooting is restarted after exchanging the cassette.

In each of these cases, the "INDEX" Indication ❷ in the Viewfinder flashes for a few seconds.

- For the correct functioning of the VHS Index Search and Intro Scan Functions on the VCR, the index signals should be at intervals of not less than 2 minutes.



Holding the Movie Camera for Shooting

1 Normal Shooting

- When walking while shooting, keep both eyes open so that you can see where you are going and what is happening around you.
- Place the Movie Camera on your right shoulder and hold it firmly with both hands.
- Hold the Eyecup of the Viewfinder as close as possible to your right or left eye.
- Take a firm stance with the legs slightly apart.
- For stable images, it is recommended to use a tripod (optional) whenever possible. (See page 57.)

2 Low-Angle Shooting

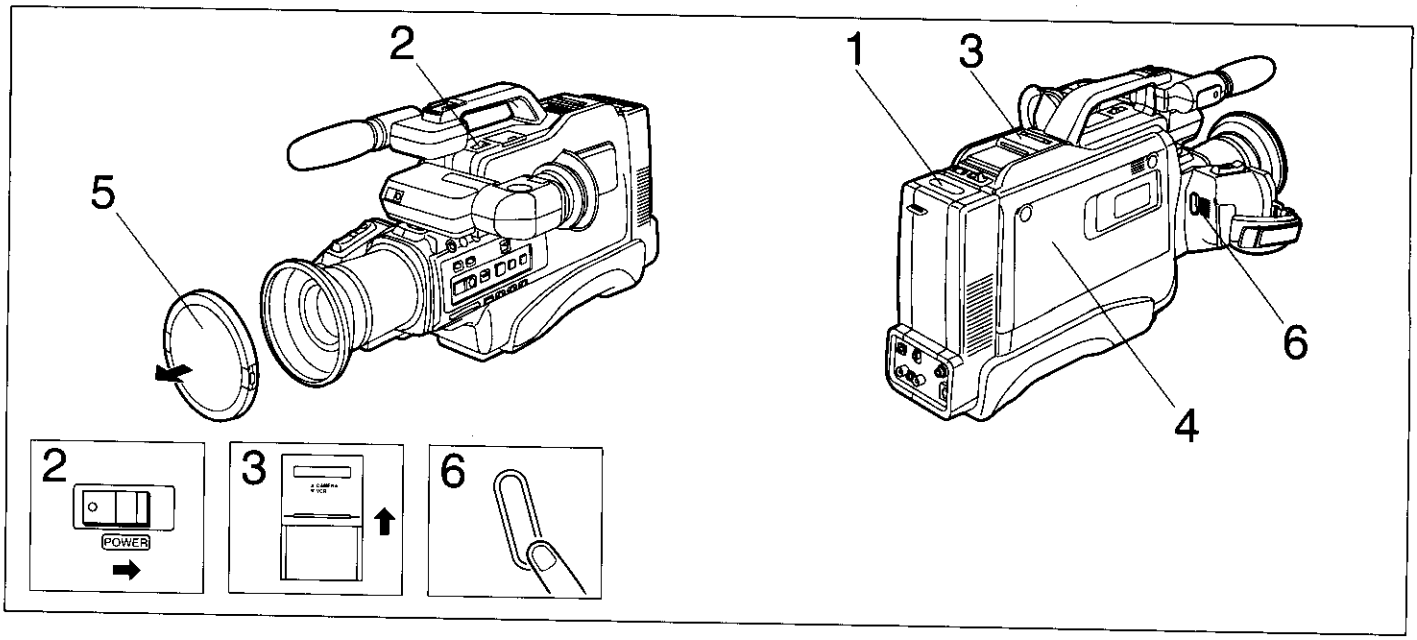
Adjust the angle of the Viewfinder according to the position in which the Movie Camera is held.

- If the Movie Camera is not held firmly in stable position, the picture in the Viewfinder cannot be watched properly.
- For easier long-angle shooting, the Start-/Stop Button on the front of the Movie Camera can be used.

3 Shooting from a high position

4 For More Stable Pictures

- Stabilize the Movie Camera by resting your elbows on a table or another stable horizontal surface.



Shooting

1 **Insert the charged Battery Pack.**

2 **Turn the Movie Camera on.**

3 **Slide the [CAMERA/VCR] Selector Cover to "CAMERA".**

4 **Insert a cassette with intact erasure prevention tab.**
- A few seconds after closing the Cassette Compartment, the Movie Camera will be in the shooting pause mode.

5 **Remove the Lens Cap.**

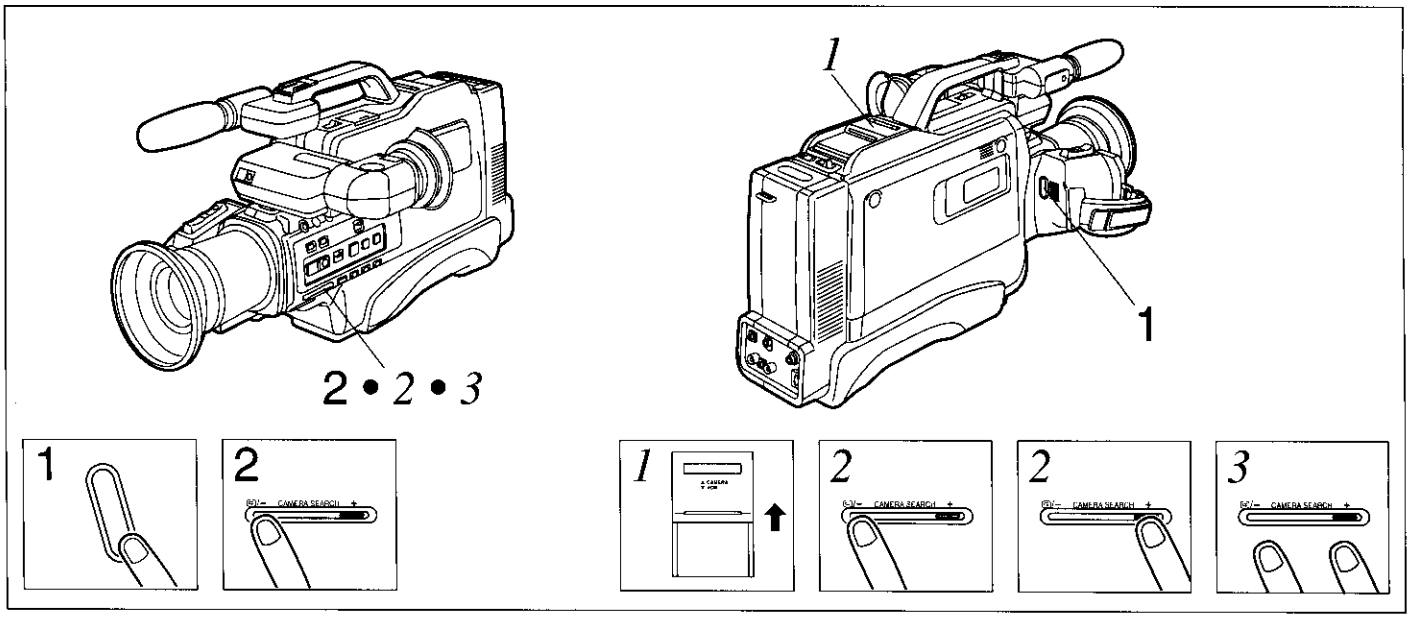
6 **Press the Start/Stop Button.**

■ **To Pause the Shooting...**
Press the Start/Stop Button.

■ **To Shoot the Next Scene(s)...**
Press the Start/Stop Button again.

■ **To Stop the Shooting...**
Press the Start/Stop Button to pause the shooting and then turn the Movie Camera off.

Note:
If the Movie Camera is left in the shooting pause mode for more than 6 minutes, the shooting pause mode will be canceled and the Movie Camera will be turned off (recording lock mode). To resume shooting from this condition, turn the Movie Camera on again. If the Movie Camera is left in the recording lock mode for more than 48 hours, it will automatically switch off completely.



Checking the Recorded Scene

1 Press the Start/Stop Button to pause the shooting.

- The "PAUSE" Indication appears in the Viewfinder.

2 Press the "−" side of the [⏪/− CAMERA SEARCH +] Button briefly.

- The "CHK" Indication in the Viewfinder lights up, and the last 2–3 seconds of the last recorded scene will be played back in the Viewfinder. After that, Movie Camera is again in the shooting pause mode.
  ("CHK" means Check.)

Note:
During shooting, use this function to confirm from time to time that the recording has been performed correctly.

Searching for a Previously Shot Scene (Camera Search)

■ How to Search for a Point in a Recorded Scene

After inserting the recorded video cassette:

***1* Slide the [CAMERA/VCR] Selector Cover to "CAMERA".**

***2* Keep pressing the "−" side of the [⏪/− CAMERA SEARCH +] Button.**

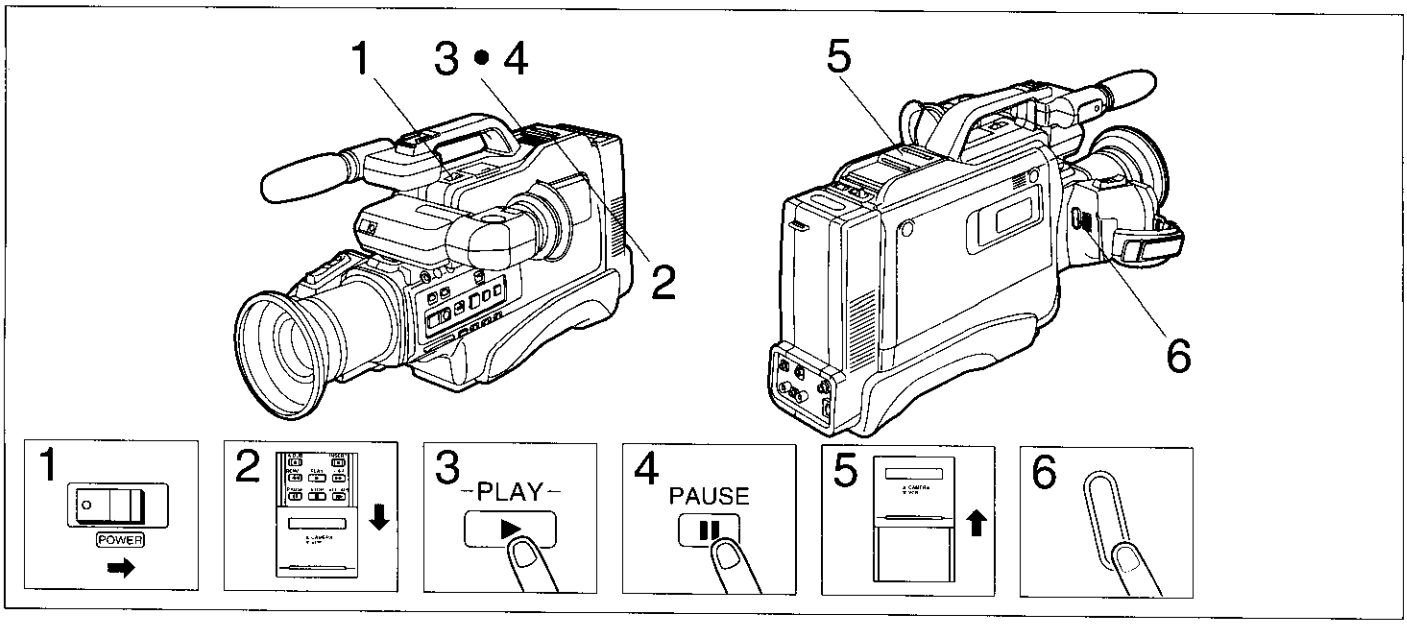
- While this button is kept pressed, the recorded scene will be played back at high speed in reverse direction.

Or keep pressing the "+" side of the [⏪/− CAMERA SEARCH +] Button.

- While this button is kept pressed, the recorded scene will be played back at normal speed in forward direction.

***3* Release this button after reaching the desired point.**

- The Movie Camera is put into the recording pause mode.



Shooting with Clean Edits

This function makes it possible to achieve smooth transitions between a previously and a newly shot scene.

1 **Turn the Movie Camera on.**

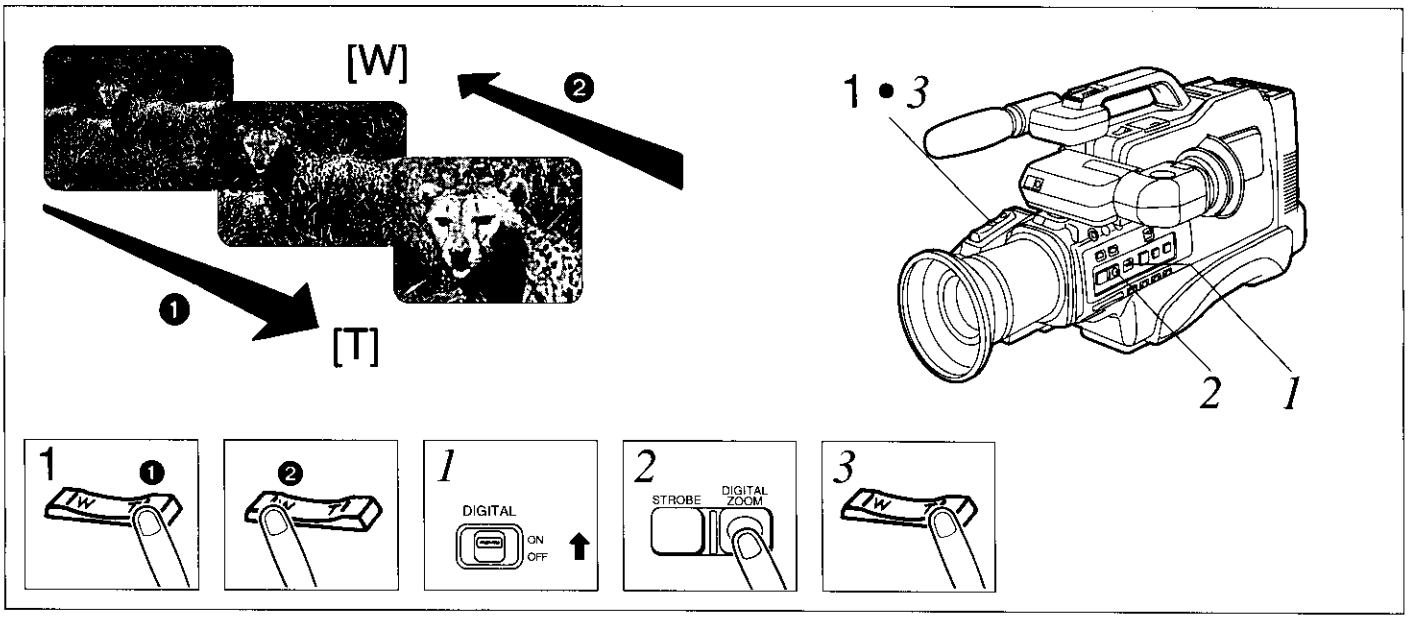
2 **Slide the [CAMERA/VCR] Selector Cover to "VCR".**
("VCR" means Video Cassette Recorder.)

3 **Press the [PLAY] Button.**

4 **Press the [PAUSE] Button after reaching the point where you want to add the next scene.**
(Thereby erasing the rest of the previously recorded scene.)

5 **Slide the [CAMERA/VCR] Selector Cover to "CAMERA".**

6 **Press the Start/Stop Button to start shooting the new scene.**
• The shooting starts.



Shooting with the Zoom Function

■ Using the Power Zoom Funciton

The Zoom Function makes it possible to zoom in on a subject and enlarge it by up to 14 times by using the [T] Zoom Button.
To make your zoom shots more impressive and to achieve exactly the desired effect, do it like the professionals: before actually shooting, make a trial run of the zooming.

1 Keep pressing the [T] Zoom Button to zoom toward telephoto.
(The subject appears closer ❶.)
Keep pressing the [W] Zoom Button to zoom toward wide-angle.
(The subject appears further away ❷.)

■ Using the Digital Zoom Function

The Digital Zoom Function makes it possible to zoom in on a subject and enlarge it by up to 140 times by using the [T] Zoom Button and the [DIGITAL ZOOM] Button.

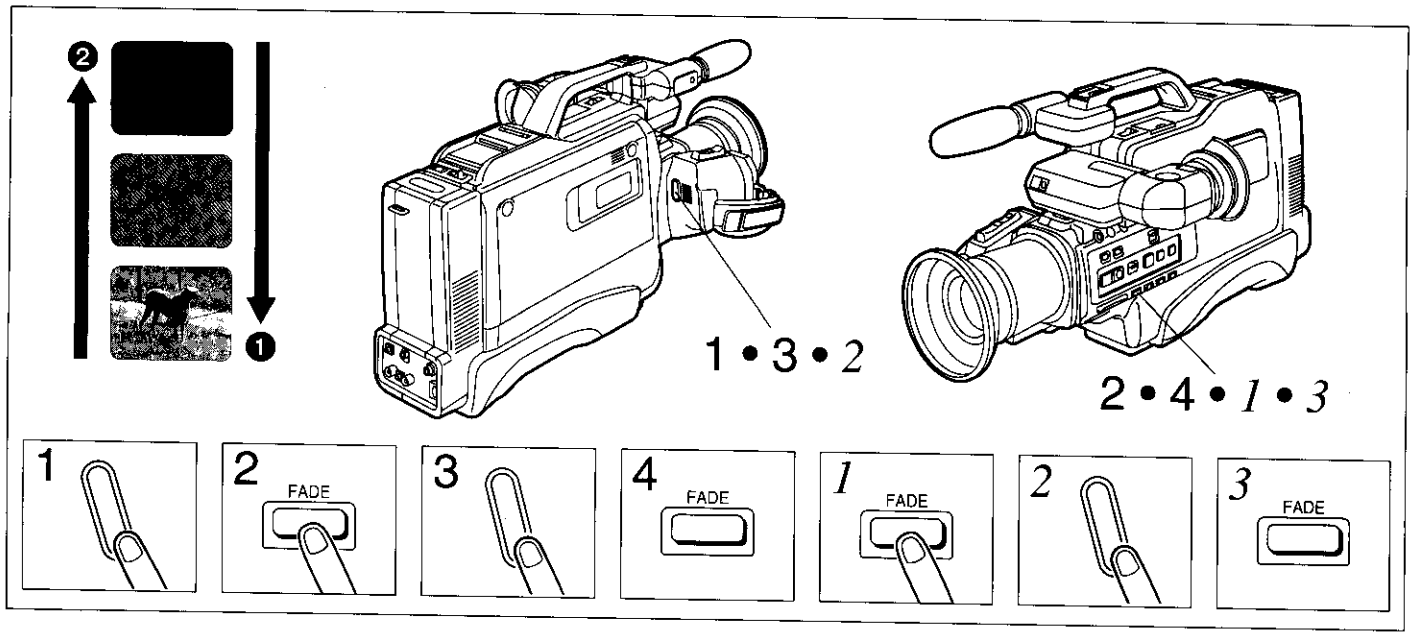
1 Set the [DIGITAL] Switch to "ON".

2 Press the [DIGITAL ZOOM] Button.
- At one press, the "D.ZOOM" Indication appears in the Viewfinder.

3 Keep pressing the [T] Zoom Button to zoom toward telephoto.

■ To Cancel this Funciton...
Press the [DIGITAL ZOOM] Button.
- When the Digital Zoom Function is turned off, the zoom range is limited to ×14.
- The Digital Zoom Function slightly decreases the picture resolution and fine picture details.

Note:
The higher the magnification of the Digital Zoom becomes, the grainer the picture will be. When the zoom range is increased to ×140, the picture and its colours may become unnatural.



Shooting with the Fade Function

■ How to Fade in ❶

Fading in from black with the Normal Fade Function is very effective at the beginning of a movie or (together with fade out) for soft transitions between scenes. And fading out to black is ideal for giving a scene or movie a gentle, lingering ending.
The sound is also gradually faded in and faded out together with the picture.

1 **Press the Start/Stop Button to pause the shooting.**

2 **Keep pressing the [FADE] Button.**

3 **After the picture in the Viewfinder has disappeared, press the Start/Stop Button to start the shooting.**

4 **After about 3 seconds, release the [FADE] Button.**

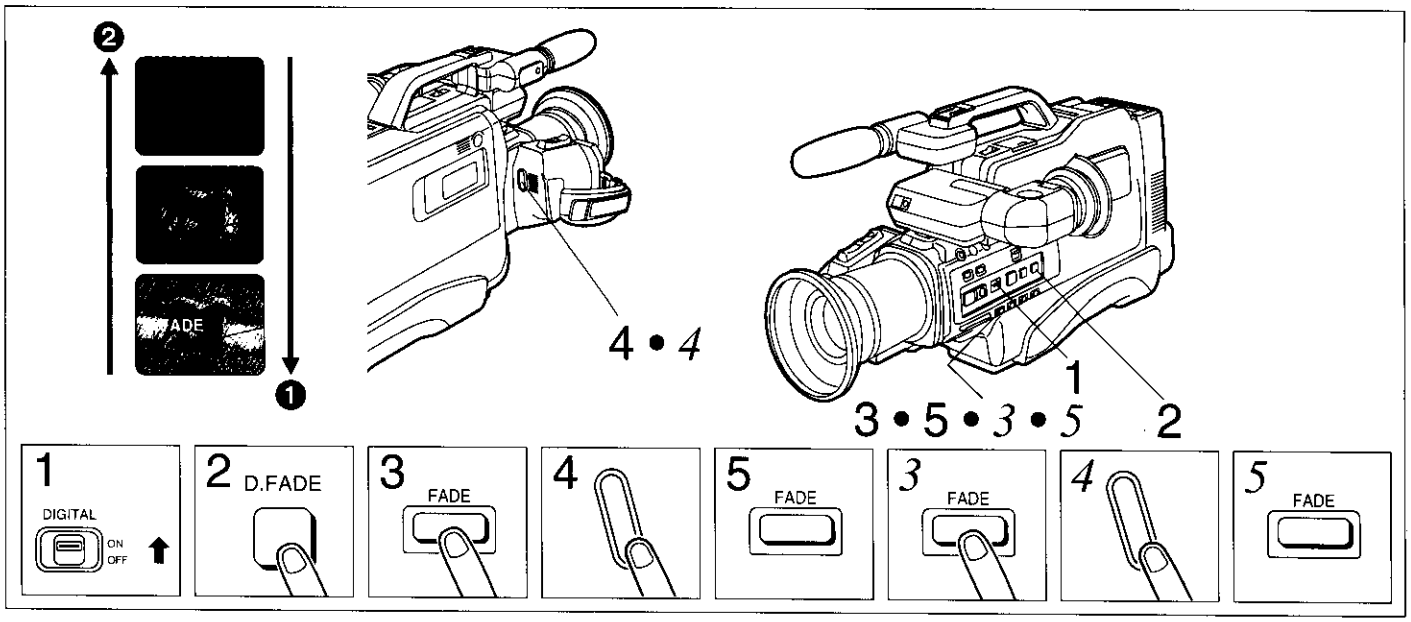
■ How to Fade out ❷

Fading out to black is convenient at the end of a scene to create a soft ending.

1 **Keep pressing the [FADE] Button during shooting.**

2 **After the picture has disappeared, press the Start/Stop Button to stop the shooting.**

3 **Release the [FADE] Button.**



Shooting with the Digital Fade Function

Fading in from black with the Digital Fade Function is a very interesting way to give groups of scenes a uniform beginning, for example by using it to start each day's action in a vacation film. It is also great for inserting scenes that do not fit into the film's natural time sequence.
The sound is also gradually faded in and faded out together with the picture.

1 **Set the [DIGITAL] Switch to "ON".**

2 **Press the [D.FADE] Button.**
- The "D.FADE" Indication appears in the Viewfinder.

■ How to Fade in ❶

3 **While in the Shooting Pause Mode, keep pressing the [FADE] Button.**

4 **After the picture in the Viewfinder has disappeared, press the Start/Stop Button to start shooting.**

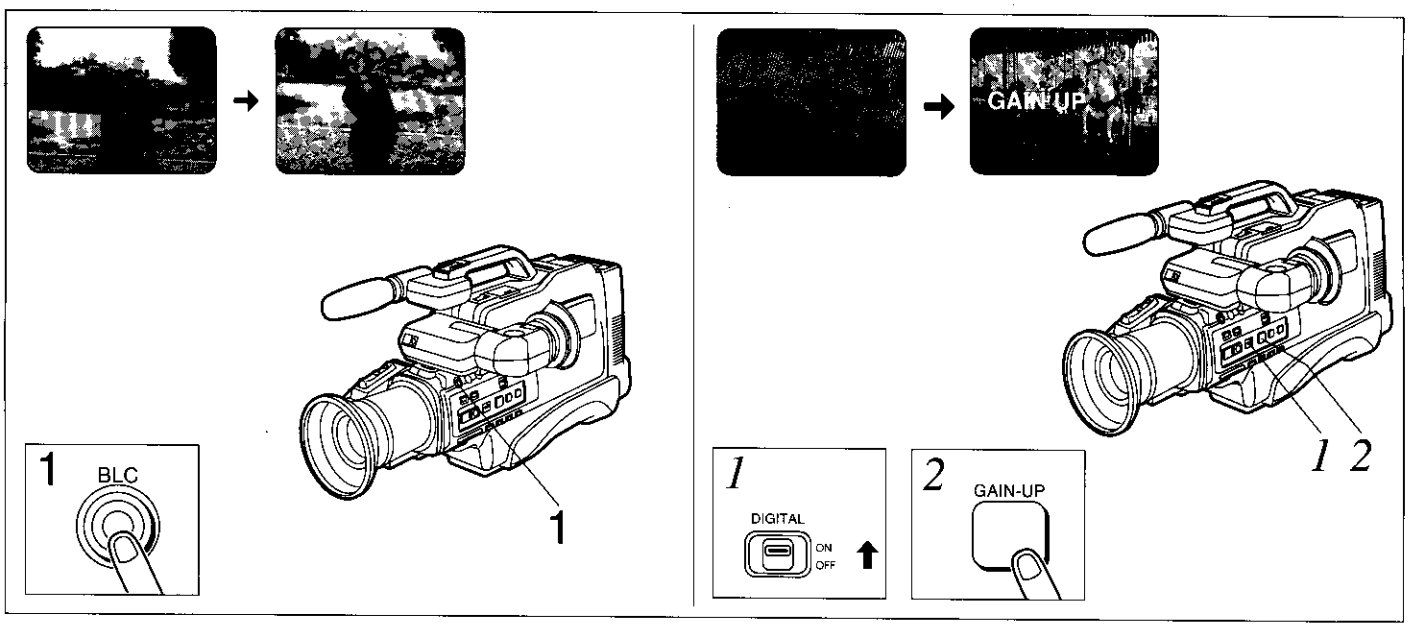
5 **After about 3 seconds, release the [FADE] Button.**

■ How to Fade out ❷

3 **Keep pressing the [FADE] Button during shooting.**

4 **After the picture has disappeared, press the Start/Stop Button to stop shooting.**

5 **Release the [FADE] Button.**



Shooting Backlit Scenes

This function makes it possible to brighten up the subject when shooting a backlit scene.

1 Keep pressing the [BLC] Button.

■ To Cancel this Function

Release the [BLC] Button.

Cautions for Shooting Backlit Subjects

- The sky may become whitish.
- In case of extremely strong backlight, it may not be possible to brighten up the subject sufficiently.
- When shooting with the sun striking the subject at an angle, star-shaped light reflexes may be recorded in the picture.

Shooting Very Dark Scenes

■ Using the High Sensitivity Function

1 Set the [DIGITAL] Switch to "ON".

2 Press the [GAIN-UP] Button.

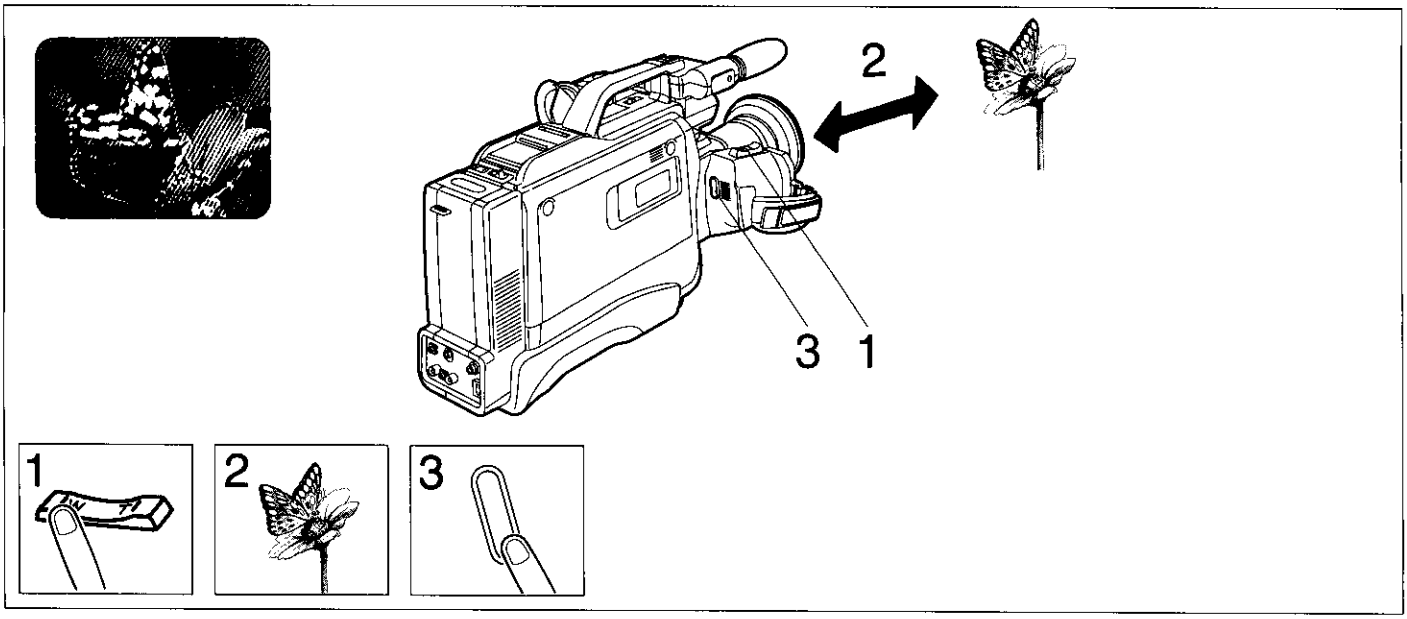
- The "GAIN UP" Indication appears in the Viewfinder.

■ To Cancel this Function

Press the [GAIN-UP] Button again.

Notes:

- Some after-image distortion will occur.
- The Sports Mode and Portrait Mode will be cancelled automatically.
- In the High-Sensitivity Mode, the focus must be adjusted manually since the Movie Camera is automatically put into the Manual Focus Mode.



Shooting with the Macro Function

The Macro Close-up Function makes it possible to shoot very small objects, photos, printed matter, insects and many other things.

1 Keep pressing the [W] Zoom Button to zoom to the maximum wide-angle position.

2 Approach the subject to the desired distance.

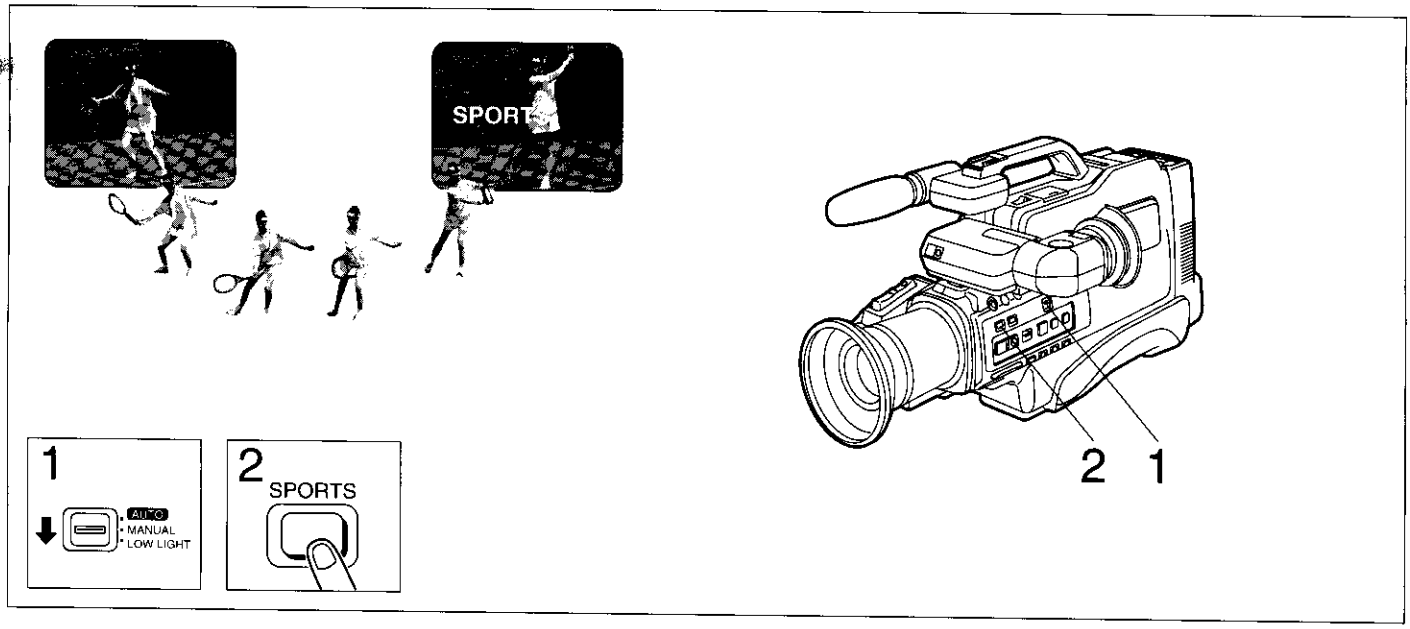
- The focus will be adjusted automatically (Auto Focus Mode).

3 Press the Start/Stop Button.

- The shooting starts.

Hints for Shooting with the Macro Close-up Function

- To get more or less of the subject into the picture, change the distance between the lens and the subject; do not use the [W] or [T] Zoom Button.
- As the depth of field is very small in macro shooting, even slight camera movements can cause the subject to go out of focus. Therefore, it is recommended to use a tripod (optional).
- When the zoom lens is in its maximum telephoto position, the minimum shooting distance between lens and subject is 1.5 m.
- In macro close-up shooting, the subject can be approached down to a minimum distance of 5 mm between lens and subject. It is recommmended to use the Auto Focus Mode. However, with a stable camera position (tripod, etc.), the Manual Focus Mode can also be used.



Shooting Fast-Moving Subjects

■ Using the Sports Mode

In the Sports Mode, the shutter speed is automatically adjusted (between 1/50 s and 1/500 s) according to the brightness of the subject, so images are sharp and stable even when shooting fast movements.
When you play back scenes recorded in the Sports Mode on a VCR, you can enjoy still and slow motion playback of very sharp images with fine details.

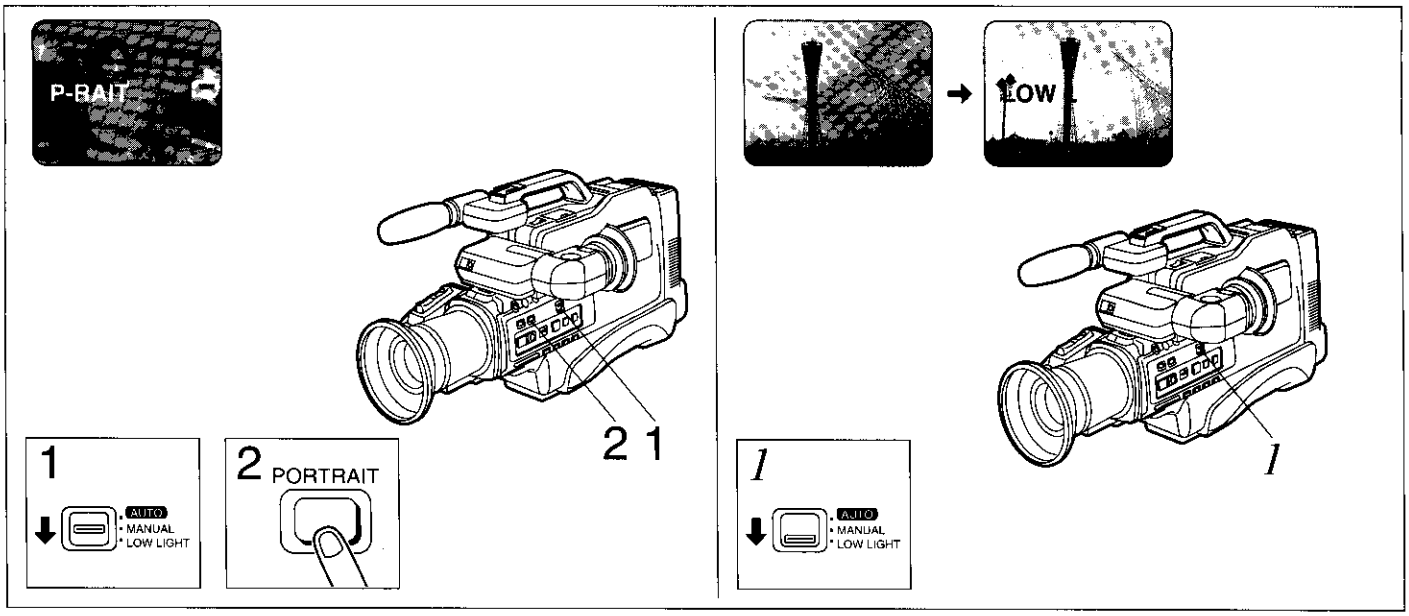
1 Set the [AUTO/MANUAL/LOW LIGHT] Mode Selector Switch to "MANUAL".

2 Press the [SPORTS] Button.
- The "SPORTS" Indication appearers in the Viewfinder.

■ To Return to the Normal Shooting Mode

Reset the [AUTO/MANUAL/LOW LIGHT] Mode Selector Switch to "AUTO".

Notes:
- The subject must be brightly lit by sunlight or other strong light, with little shade.
- When shooting under fluorescent, mercury-vapour or natrium lamps, the picture will be adversely influenced by flickering.
- When a scene shot in the Sports Mode is played back in the normal playback mode, the picture movement may not be as smooth as it usually is.
- When shooting under weak lighting, the "SPORTS" Indication flashes to warn that the Sports Mode may not be effective.



Marking your Subject Stand out Sharply from the Background

■ Using the Portrait Mode

In the Portrait Mode, the iris is automatically set to the maximum aperture for very small depth-of-field. This gives you a sharply focused subject in the centre of the picture with a blurred background and foreground.

1 Set the [AUTO/MANUAL/LOW LIGHT] Mode Selector Switch to "MANUAL".

2 Press the [PORTRAIT] Button.

- The "P-RAIT" Indication appears in the Viewfinder.
- Pressing the [T] Zoom Button increases the blurring of the background.

■ To return to the Normal Shooting Mode

Release the [AUTO/MANUAL/LOW LIGHT] Mode Selector Switch to "AUTO".

Shooting Dark Scenes More Brightly

■ Using the Low Light Mode

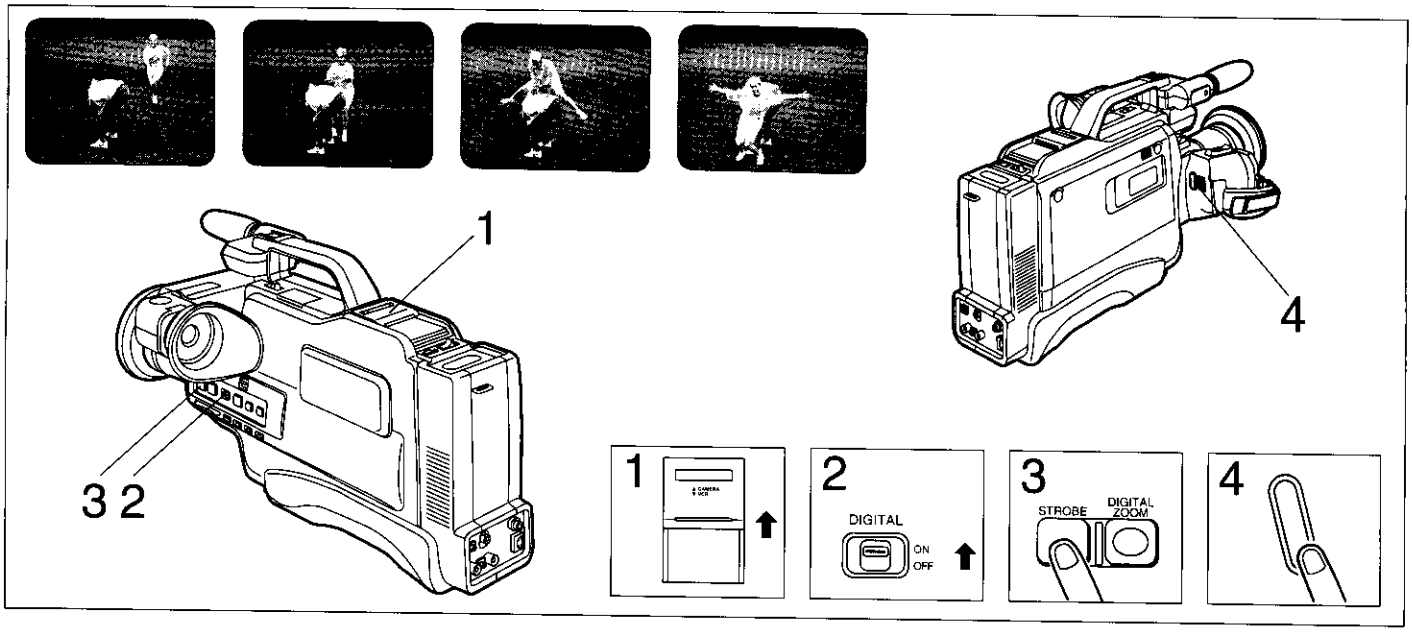
Note:
Even if you use this mode for outdoor shooting in the daytime, the result will be almost the same as when shooting in the normal mode.

***1* Set the [AUTO/MANUAL/LOW LIGHT] Mode Selector Switch to "LOW LIGHT".**

- The "LOW L" Indication appears in the Viewfinder.
- This increases the sensitivity and brightens up the picture.

■ To Return to the Normal Shooting Mode

Reset the [AUTO/MANUAL/LOW LIGHT] Mode Selector Switch to "AUTO".



Shooting with Strobe Effect

For continuously recording 6 still images per second:

1 Slide the [CAMERA/VCR] Selector Cover to "CAMERA".

2 Set the [DIGITAL] Switch to "ON".

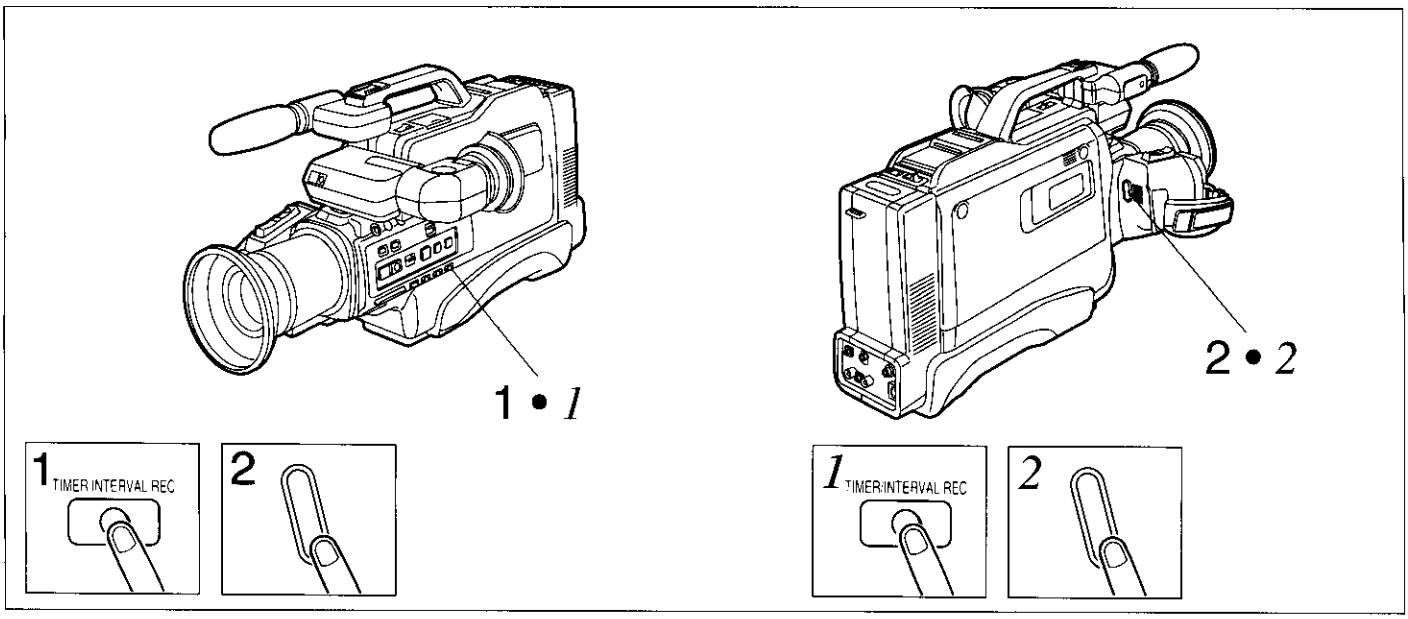
3 Press the [STROBE] Button.
- The picture in the Viewfinder will also have a strobe effect.

4 Press the Start/Stop Button.
- The shooting with strobe effect starts.

■ To Cancel this Function...

Press the [STROBE] Button until normal movement in the Viewfinder is observed.

Notes:
- When shooting under fluorescent lamps, the brightness of the picture may fluctuate.
- Since the strobe pictures are recorded from digital image memory, the picture quality may be slightly inferior to that of normally recorded pictures.



Self-Timer Recording and Interval Recording

■ Self-Timer Recording

1 Press the [TIMER/INTERVAL REC] Button during shooting pause to select the desired shooting mode.

- When the Timer/Interval Recording Button is pressed once, the "SLF20" Indication appears in the Viewfinder.
- When this button is pressed one more time, the "SLF" Indication appears in the Viewfinder.

2 Press the Start/Stop Button.

- The self-timer recording will start 10 seconds later.
- When "SLF20" is indicated, the recording will be made for 20 seconds.
  When "SLF" is indicated, the recording will be made until the tape reaches its end.

To stop the Self-Timer Recording Midway
Press the Start/Stop Button, and the self-timer recording will be cancelled.

■ Interval Recording

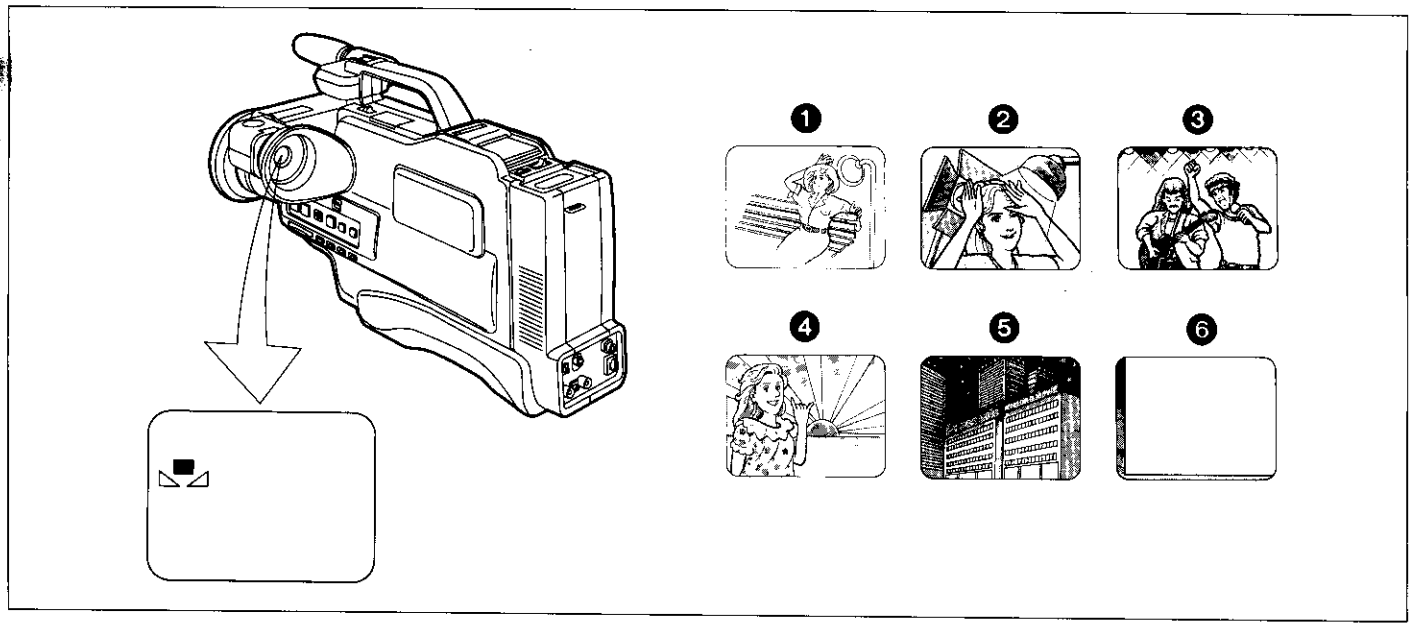
This recording function automatically makes recordings of approx. 1 second duration at 1-minute intervals. (However, the initial recording will last for about 5 seconds.) The interval recording will continue for a maximum of 10 hours, after which the Movie Camera will turn itself off.

1 Press the [TIMER/INTERVAL REC] Button three times in the shooting pause mode.

- "INT" will appear in the Viewfinder.

2 Press the Start/Stop Button.

To stop the Interval Recording Midway
Press the Start/Stop Button, and the interval recording will be cancelled.



Automatic White Balance Adjustment

To human eyes, white subjects appear as white even under different lighting conditions. A Movie Camera, however, would give these white subjects, depending on the colour of the light source, a reddish or bluish tint. To attain recordings with natural colours, it is necessary to adjust the sensor in the camera to the existing colour of the light. This adjustment is called white balance adjustment. This camera offers two modes for this adjustment: Automatic and Manual White Balance Adjustment.
The Automatic White Balance Adjustment Function provides satisfactory results with almost all subjects. (No operation is necessary.)

When the " " Indication is displayed in the Viewfinder, the Movie Camera is not in the Auto White Balance Mode. In this case, press the [W.B] Button to make the " " Indication disappear.

- If the Movie Camera is moved from outdoors to indoors during shooting, the picture will initially take on a slightly reddish cast but it will gradually regain its natural colours.
- In the following shooting situations, the Auto White Balance Adjustment Mode may not provide satisfactory results; use the Manual White Balance Adjustment Mode instead:

❶ When shooting under mercury-vapor, natrium or some types of fluorescent lamps.

❷ When intense lighting is used, e.g. from a halogen lamp, or when the colour temperature of the light source is low.

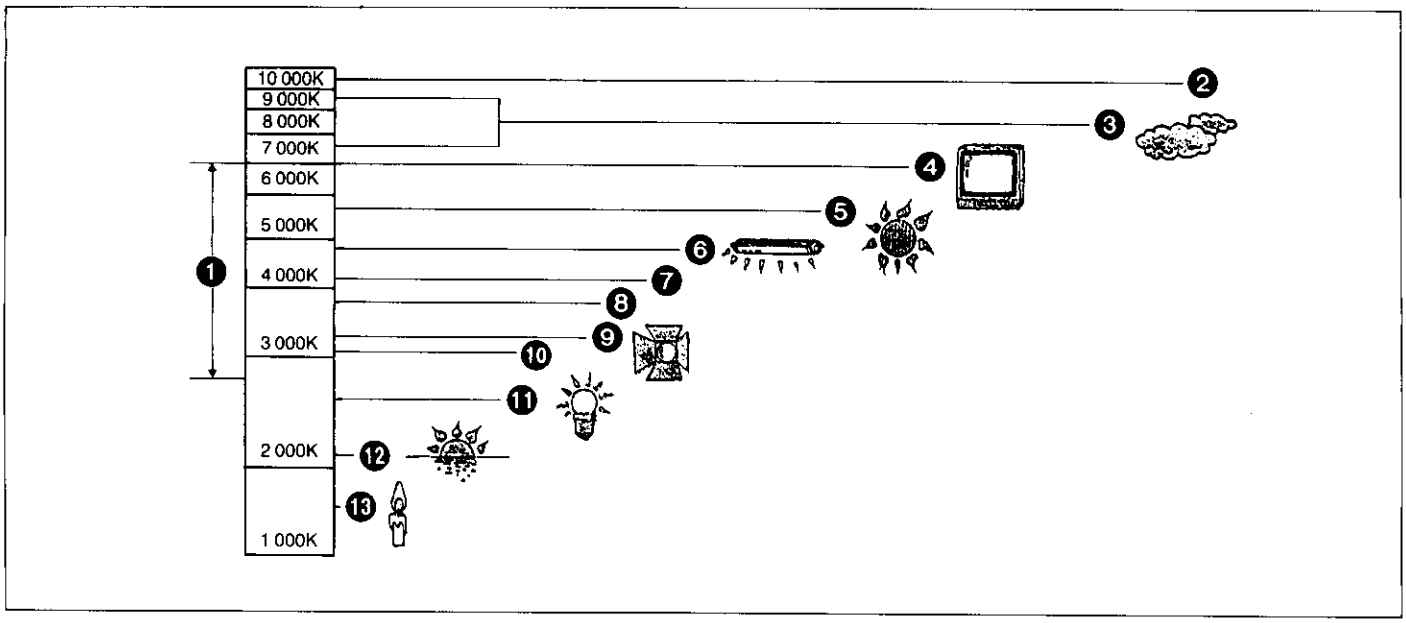
❸ When shooting under lighting conditions which change suddenly.

❹ When shooting outdoors at sunrise or sunset. (Low light)

❺ When shooting under firework illumination at night outdoors.

❻ When shooting a subject or background of a single colour.

- When shooting under bad or reduced lighting conditions.



Automatic White Balance Adjustment (Cont'd)

■ What is the Colour Temperature of the Light Source

The colour temperature of the light source is measured in Kelvin (K). The higher the Kelvin value is, the more bluish the light is; the lower the value, the more reddish the light is. This is not directly related to the brightness.

❶ Control range of the Auto White Balance

❷ Blue sky

❸ Cloudy sky

❹ TV screen

❺ Sunlight

❻ White fluorescent light

❼ 2 hours after sunrise or before sunset

❽ 1 hour after sunrise or before sunset

❾ Halogen light bulb

❿ 30 minutes after sunrise or before sunset

⓫ Incandescent electric light bulb

⓬ Sunrise or sunset

⓭ Candlelight

For the following types of scenes, the Automatic White Balance Adjustment Mode cannot provide satisfactory results, even if the light source is within the range ❶ shown on page 35. Use the Manual White Balance Adjustment Mode instead.

■ When a Scene Is Lit by Several Light Sources

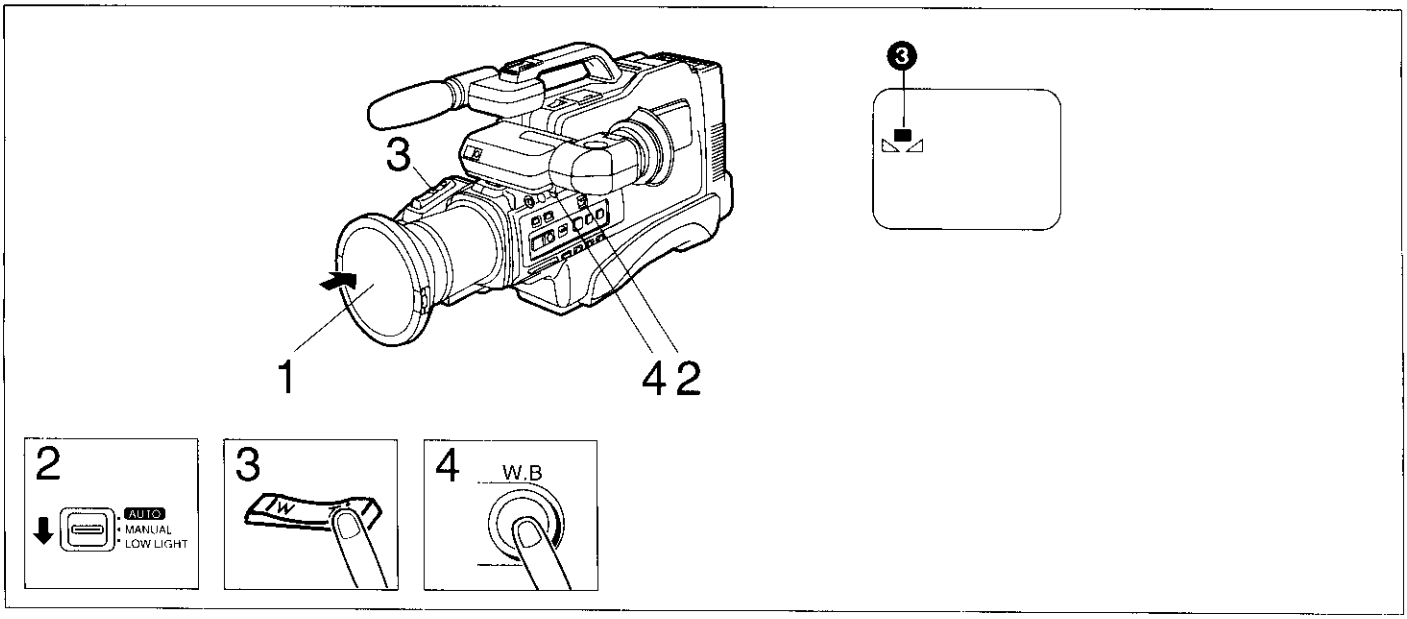
If there is more than one light source for a scene, the Movie Camera cannot decide which of the stored White Balance Adjustment settings to use. Therefore, precise Automatic White Balance Adjustment is not possible in such cases.

■ When Shooting an Outdoor Scene from Inside a Building

As the colour of the light entering through the lens differs greatly from that received by the White Balance Sensor, the Automatic White Balance Adjustment Function compensates for indoor lighting and this results in unnatural colours.

■ When Shooting in a Very Dark Place

As the colour information entering through the lens is greatly reduced, the Automatic White Balance Adjustment Function cannot correctly compensate for the colour of the lighting and this results in unnatural colours.



Manual White Balance Adjustment

■ Shooting under a Single Light Source or under a Mixture of Different Kinds of Lighting

1 Attach the Lens Cap to the Lens.

2 Set the [AUTO/MANUAL/LOW LIGHT] Mode Selector Switch to "MANUAL".

3 Keep pressing the [T] Zoom Button until the screen in the Viewfinder becomes completely white.

4 Keep pressing the [W.B] Button for more than 1 second.

The following indications in the Viewfinder inform about the state of the adjustment:

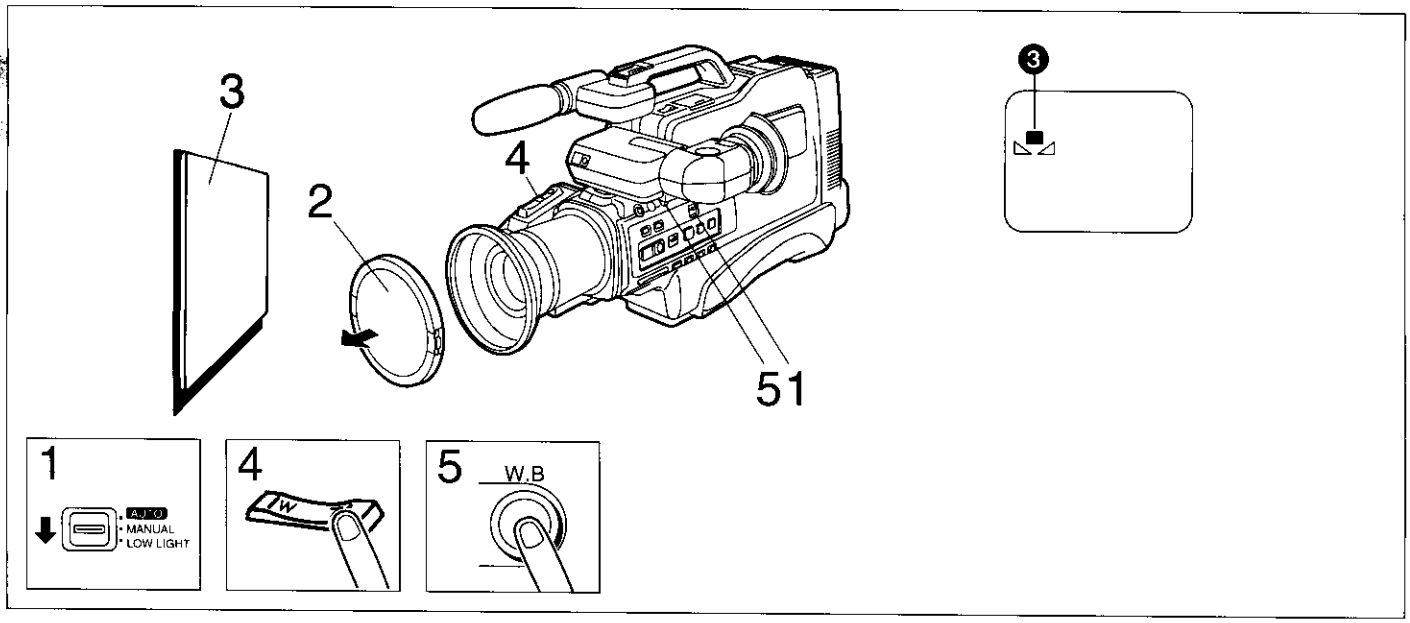
❶ " " flashes slowly . . . . . Not adjusted

❷ " " flashes rapidly . . . . . During adjustment

❸ " " is lit . . . . . Adjustment is finished
The Movie Camera is now ready for shooting.

■ Automatic Recall of the Previous White Balance Setting

- After turning the Movie Camera off and later on again, the " " Indication flashes slowly, however, the last previous white balance setting is still maintained.
  However, to ensure the best possible colour reproduction, adjust the white balance again.
  The last previous white balance setting is also maintained after pressing the "–" side of the [/– CAMERA SEARCH +] Button to confirm the end of the previously recorded scene.
  But after removing the Battery Pack (or disconnecting the AC Adaptor from the Movie Camera) the last previous white balance setting is no longer maintained.
- When moving the Movie Camera from indoor to outdoor or vice versa, be sure to adjust the white balance, as the colour of the light has changed considerably.



Manual White Balance Adjustment (cont'd)

■ **If there are several light sources or if the illumination is weak (indoors, etc.):**

1 **Set the [AUTO/MANUAL/LOW LIGHT] Mode Selector Switch to "MANUAL".**

2 **Remove the Lens Cap.**

3 **Point the Movie Camera at white paper or at another white object.**

4 **Keep pressing the [T] Zoom Button until the screen in the Viewfinder becomes completely white.**

5 **Keep pressing the [W.B] Button for more than 1 second.**

The following indications in the Viewfinder inform about the state of the adjustment:

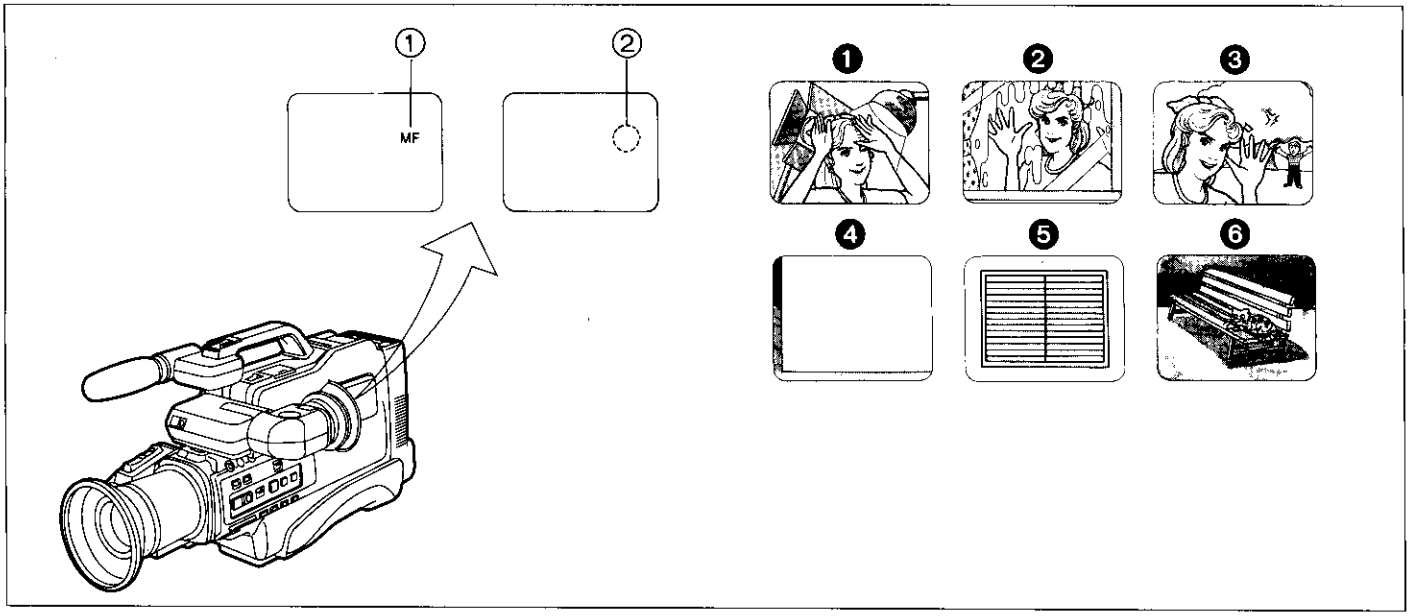
❶ " ◺■◿ " flashes slowly .....Not adjusted

❷ " ◺■◿ " flashes rapidly.....During adjustment

❸ " ◺■◿ " is lit .....Adjustment is finished
The Movie Camera is now ready for shooting.

■ **To Change Back to the Auto White Balance Adjustment Mode...**

Press the [W.B] Button to make the " ◺■◿ " Indication disappear or set the [AUTO/MANUAL/LOW LIGHT] Mode Selector Switch to "AUTO".



Automatic Focus Function

■ No operation is necessary

This Movie Camera focuses automatically on almost all subjects. When the "MF" Indication ① is not displayed in the Viewfinder, the Movie Camera is in the auto focus mode.

("MF" means Manual Focus)

- The focus will automatically be adjusted to the subject in the centre of the Viewfinder.
- Different distances of the subjects in the picture can irritate the Auto Focus System and prevent it from focusing on the distance that is important for you (pumping effect). In this case, it is recommended to switch over to the Manual Focus Mode (MF).

■ When the "MF" Indication is displayed in the Viewfinder ①...

Press the [FOCUS] Button or set the [AUTO/MANUAL/LOW LIGHT] Mode Selector Switch to "AUTO" to activate the Auto Focus Mode.

- The "MF" Indication in the Viewfinder disappears ②.

In the following shooting situations, the Auto Focus Mode may not provide satisfactory results; use the Manual Focus Mode instead.

❶ Shiny surfaces. Subjects with backlighting or much light reflection.

❷ A subject behind dirty glass.

❸ A subject with a part of it near the Movie Camera and another part far away from it.

❹ A flat surface, e.g. a white wall.

❺ A subject with horizontal stripes.

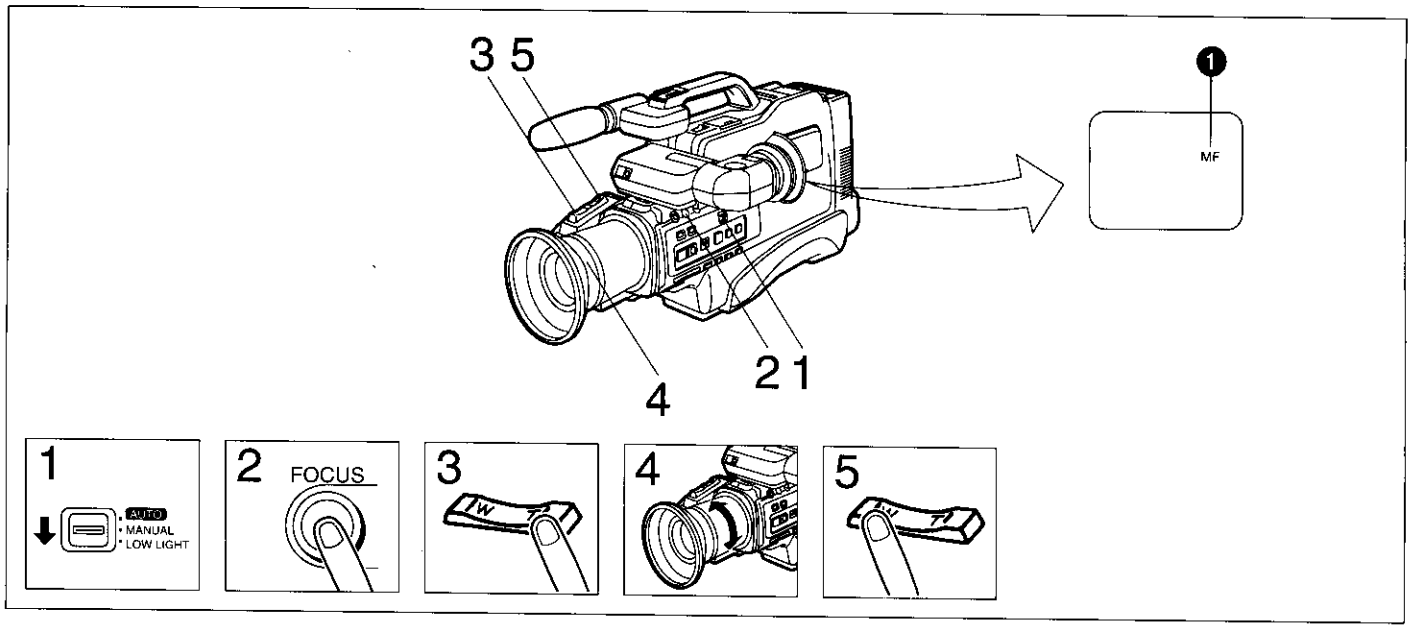
❻ An oblique subject.

Others:

—A fast-moving subject.
—A subject with a dark surface.
—When using special lenses, etc.

Note:

When zooming from wide-angle toward telephoto, the subject may slightly go out of focus depending on the shooting conditions.



Manual Focus Function

1 Set the [AUTO/MANUAL/LOW LIGHT] Mode Selector Switch to "MANUAL".

2 Press the [FOCUS] Button.
- The "MF" Indication appears in the Viewfinder ❶.

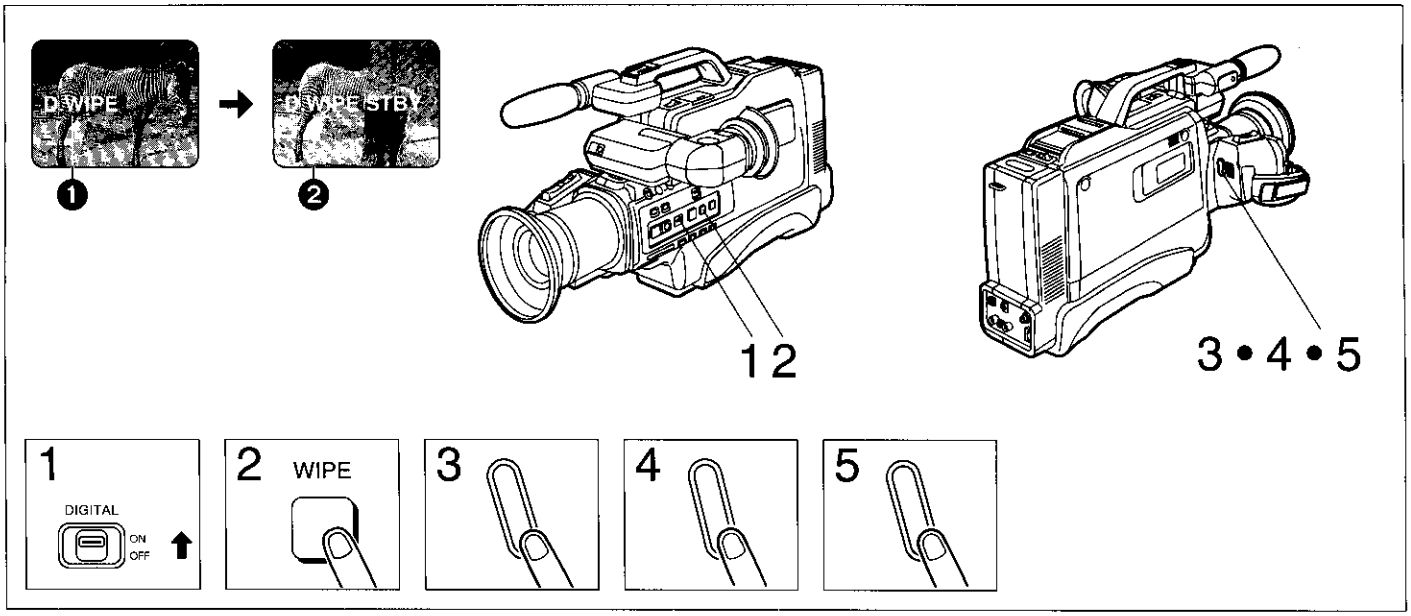
3 Press the [T] Zoom Button to zoom in on the subject to be focused.

4 Turn the Focus Ring to adjust the focus.

5 Press the [W] Zoom Button to zoom back as desired.

■ **To Change back to the Auto Focus Mode...**
Press the [FOCUS] Button to make the "MF" Indication disappear or set the [AUTO/MANUAL/LOW LIGHT] Mode Selector Switch to "AUTO".

Note:
When using the Manual Focus Mode, always adjust the lens with the Zoom [T] Button in the maximum tele setting.
This will ensure that the subject remains precisely focused throughout the zoom range from the maximum tele to maximum wide-angle setting.



Shooting with the Digital Wipe Function

This function makes it possible to achieve a smooth transition from the last recorded scene to the next scene. When starting to shoot the new scene, a still picture of the last scene appears, and it then changes over to the moving picture of the new scene with Digital Wipe.

1 Set the [DIGITAL] Switch to "ON".

2 Press the [WIPE] Button.

- The "D.WIPE" Indication ❶ appears in the Viewfinder.

3 Press the Start/Stop Button.

- The shooting starts.

4 Press the Start/Stop Button.

- The shooting stops (Shooting Pause Mode).
- The Indication ❶ changes to ❷.
- The last picture of just recorded scene is kept in the digital image memory.

5 Press the Start/Stop Button.

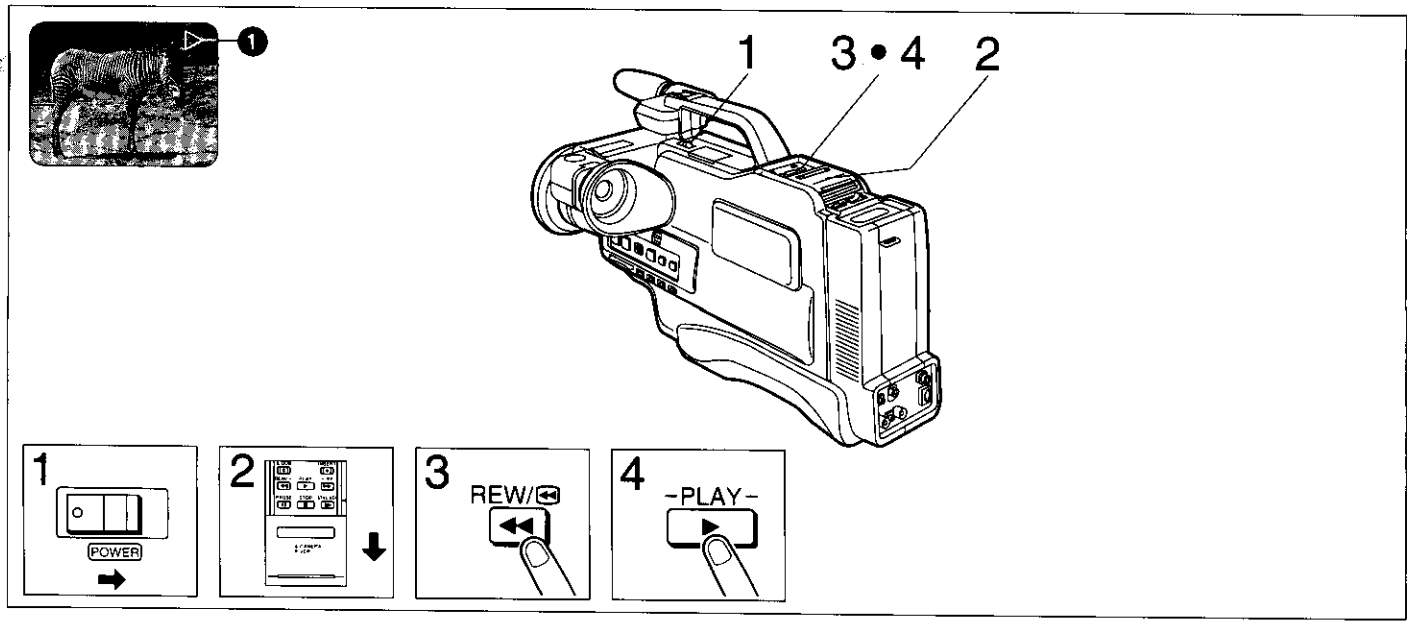
- The picture (from memory) appears as still picture. It is then gradually replaced from right to left by the moving picture of the new scene.

■ To Cancel the Digital Wipe Function

Set the [DIGITAL] Switch to "OFF" or press the [WIPE] Button.

Notes:

- Since the still picture is recorded from digital image memory, the picture quality becomes slightly inferior to that of normally recorded pictures.
- Performing Recording Review does not erase the picture in the digital image memory.



Playback

The recorded tape can be played back in the Viewfinder or on a connected TV set.

■ How to Play Back in the Viewfinder

(Playback from the Beginning of the Tape)

1 Turn the Movie Camera on.

2 Slide the [CAMERA/VCR] Selector Cover to "VCR".

3 Press the [REW/◀◀] Button.

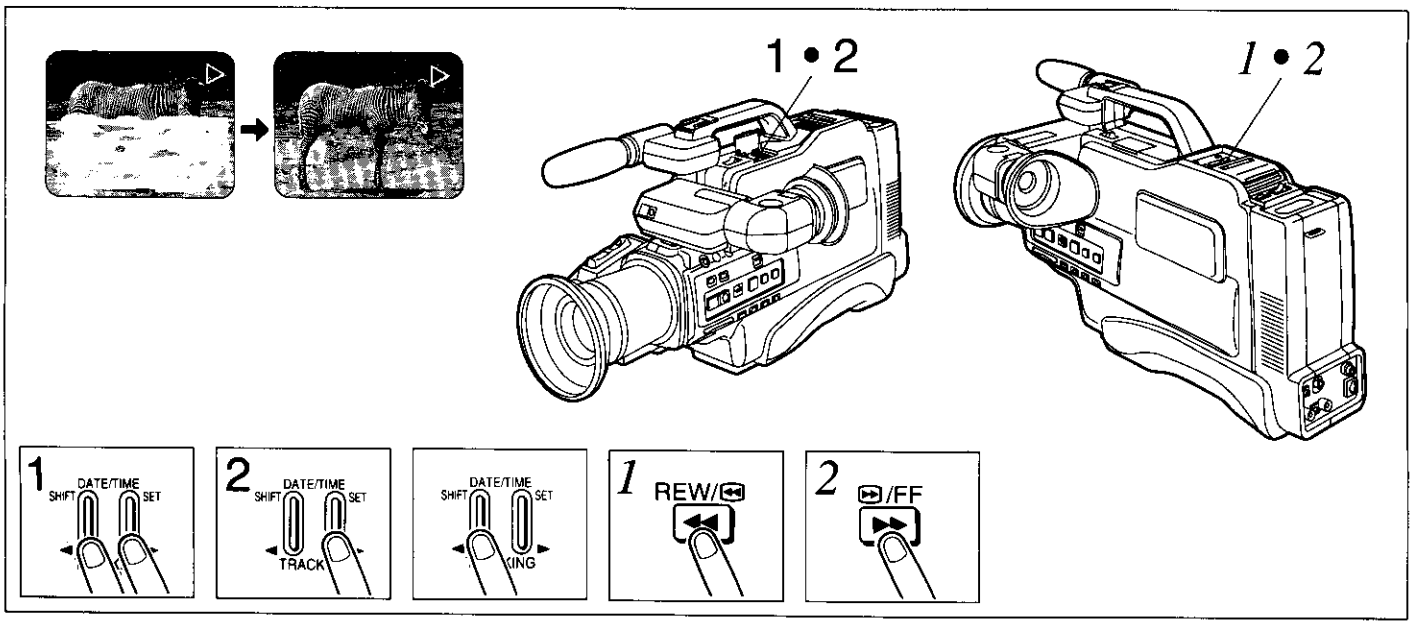
- The tape will stop automatically when it reaches its beginning.

4 Press the [PLAY] Button.

- The playback starts.
  The Playback Indication "▷" ❶ appears in the Viewfinder.
- The tape will be rewound automatically when it reaches its end.

■ To Stop the Playback...

Press the [STOP] Button.



Playback (cont'd)

■ How to Adjust the Tracking

If the picture is distorted by noise bars during playback, the tracking needs to be adjusted.

1 Press both the [◄ TRACKING] and [TRACKING ►] Buttons simultaneously.

2 Eliminate any noise bars by adjusting the tracking with the [◄ TRACKING] or [TRACKING ►] Button.

- When playing back a video cassette which has been recorded on another movie camera or video tape recorder, it may not be possible to completely eliminate these noise bars.

■ How to Rewind or Fast-forward the Tape

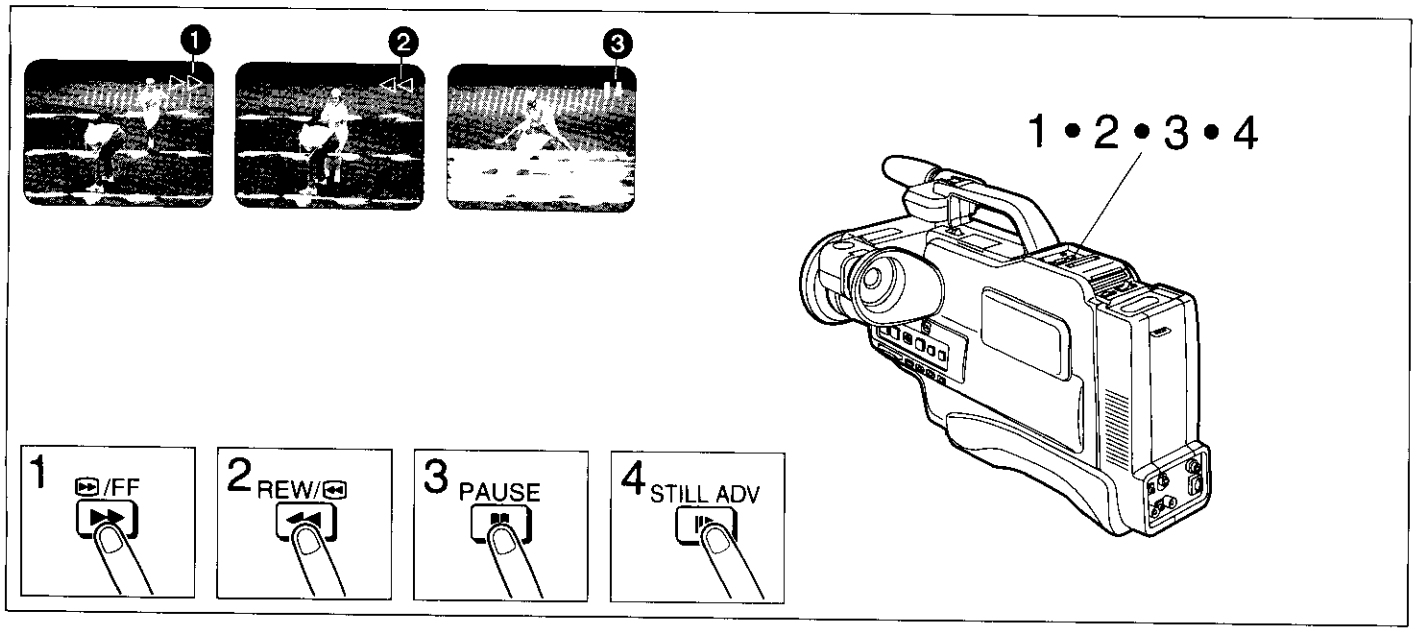
With the Movie Camera in the stop mode:

***1* Press the [REW/⏪] Button to rewind the tape at high speed.**

- The tape will stop automatically when it reaches its beginning.

***2* Press the [⏩/FF] Button to wind the tape forward at high speed.**

- The tape will be rewound automatically when it reaches its end.



Playback (cont'd)

During Normal Playback

■ For Cue Playback

1 Keep pressing the [⏩/FF] Button.

- The Fast Forward/Cue Mode Indication "▷▷" ❶ appears in the Viewfinder.

■ For Review Playback

2 Keep pressing the [REW/⏪] Button.

- The Rewind/Review Mode Indication "◁◁" ❷ appears in the Viewfinder.

■ For Still Playback

3 Press the [PAUSE] Button.

- The Still Mode Indication "❚❚" ❸ appears in the Viewfinder.

■ For Still Advance Playback

(During Still Playback)

4 Keep pressing the [STILL ADV] Button.

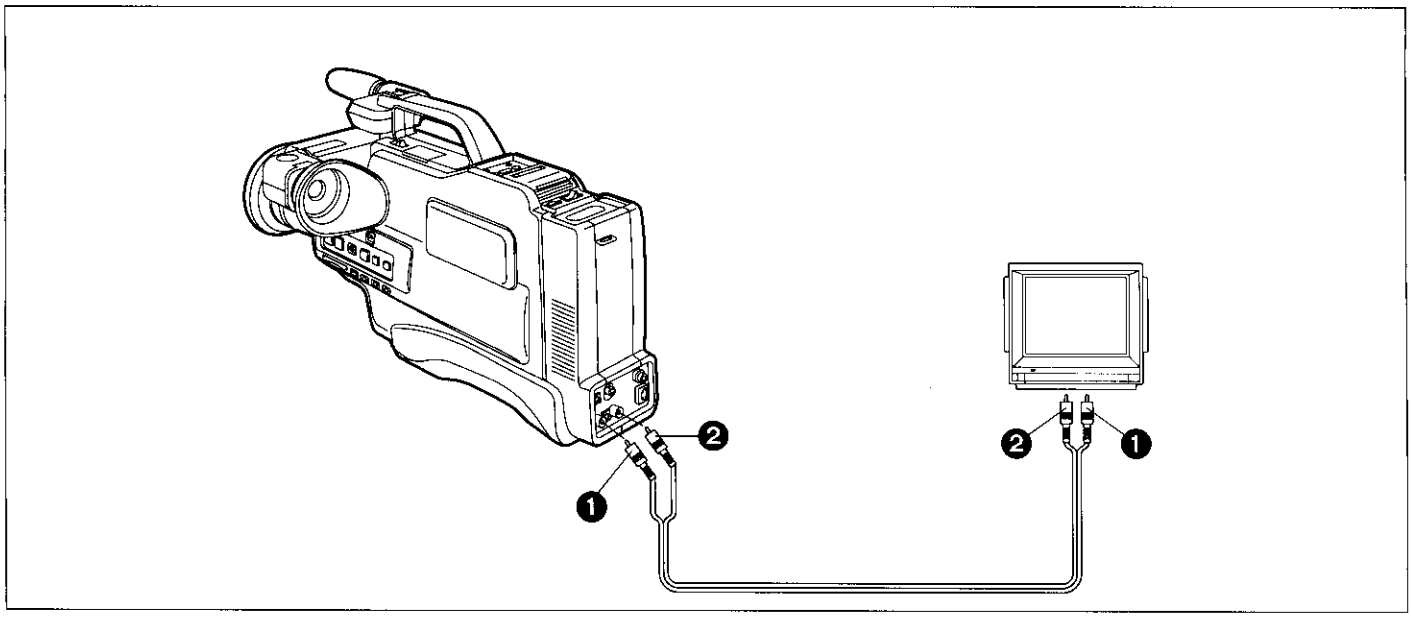
To Resume Normal Playback

Press the [PAUSE] Button again.

If the Movie Camera is left in the Still Playback Mode for about 6 minutes, it will switch over to the stop mode, to protect the tape and the video heads.

Note:

The sound will be played back only during normal playback (if connected to a TV set).



Playback via a TV Set (Connections)

■ Playback via a TV Set with AV Input Socket

•Turn off the Movie Camera and the TV set.

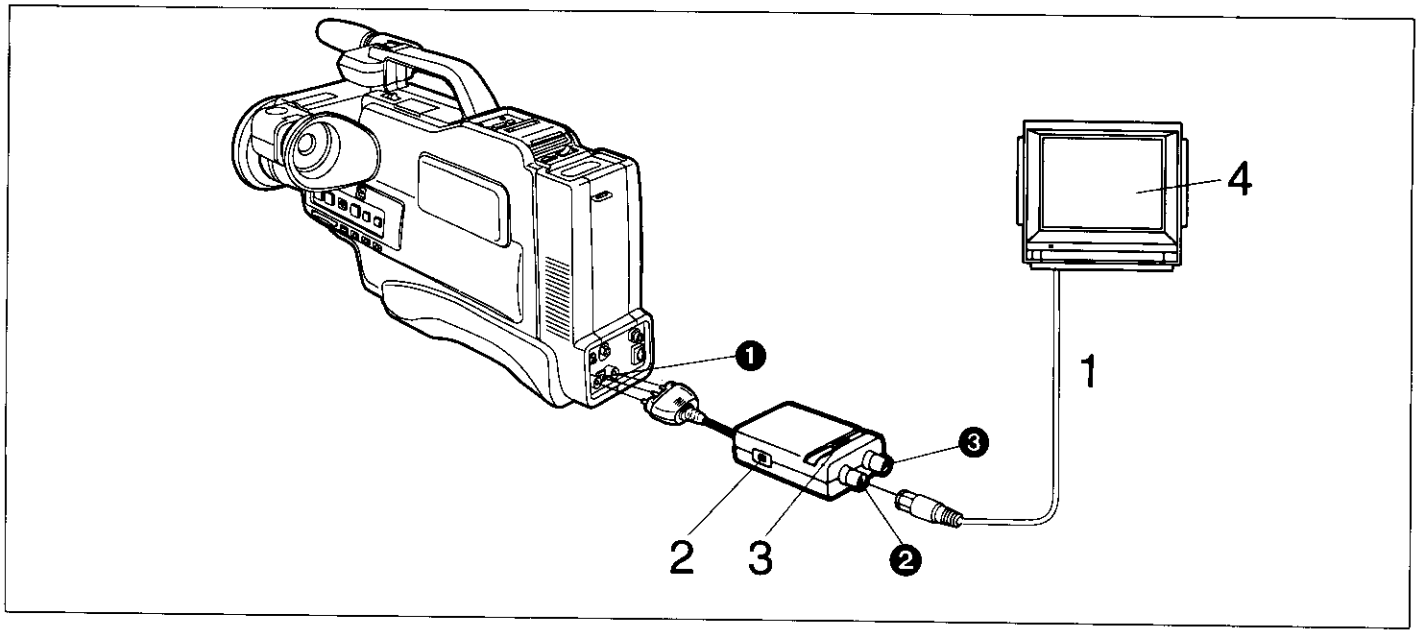
Connect the Movie Camera to the TV set.

(Audio/Video Cable is supplied.)

Movie Camera		TV Set
Video Output Socket ❶	——→	Video Input Socket ❶
Audio Output Socket ❷	——→	Audio Input Socket ❷

■ **Activate the Playback Operation**

(See page 42.)

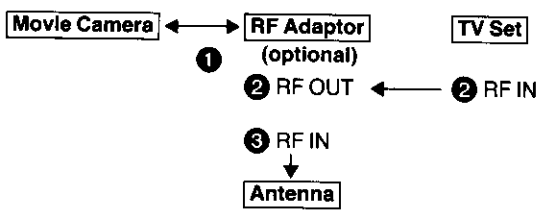


Playback via a TV Set (cont'd)

■ Playback via a TV Set without AV Socket

•Turn off the Movie Camera and the TV set.

1 Connect the Movie Camera to the TV set.



2 Set the PAL System Selector Switch to the "G" position.

3 Set the TV/VTR Selector Switch on the RF Adaptor to:

VTR: For playing back a video cassette.
TV: For watching TV.

4 Select an unused TV programme position (channel).

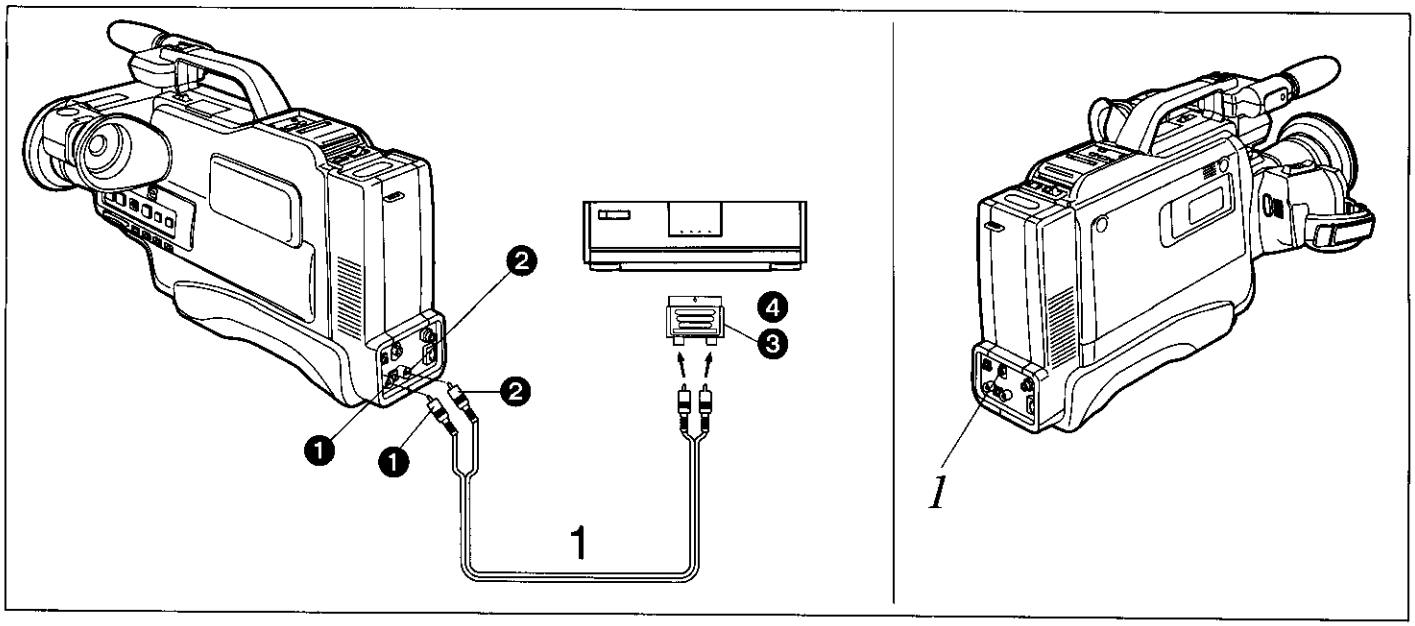
- Follow the tuning procedure outlined in the instruction booklet for your TV set to re-tune your TV set to the UHF transmission channel 36. The camera picture now appears on the TV screen.
- If in doubt, consult your local video dealer.

■ Activate the Playback Operation

(See page 42.)

Australia model only:

FOR YOUR SAFETY:
Install any external aerial to AS 1417.1.



Copying (Dubbing)

■ Connections

1 Connect the Movie Camera to a VCR.

Using the Supplied Audio/Video Cable

Movie Camera		Video Cassette Recorder (VCR)
Video Output Socket ❶	→	Video Input Socket ❶
Audio Output Socket ❷	→	Audio Input Socket ❷

■ Operations

Movie Camera

1. Insert a recorded video cassette into the Movie Camera.
2. Press the [PLAY] Button (and if necessary the [▶▶]/FF] or [REW/◀◀] Button to locate the scene from where the dubbing is to start).
3. Press the [PAUSE] Button at the point where the dubbing is to start.
6. Press the [PAUSE] Button to start the playback.
8. Locate on the Movie Camera the beginning of the next scene to be dubbed, and press the [PAUSE] Button at that point.

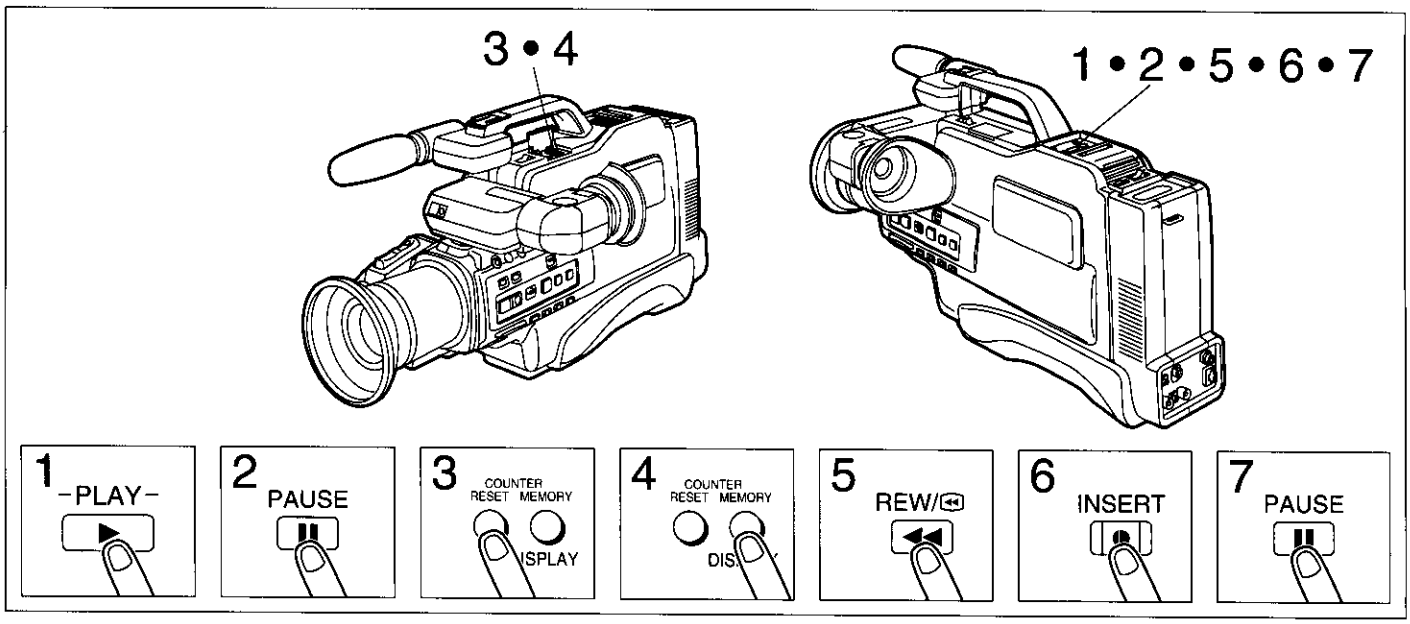
Video Cassette Recorder (VCR)

4. Insert a video cassette with intact erasure prevention tab into the VCR.
5. Press the Record Button to start recording.
7. Press the Pause/Still Button at the exact position where the recording is to end.
   - The VCR is now in the recording pause mode.
9. Press the Pause/Still Button again to resume recording.

- Repeat the operation steps 6 to 9 for each additional scene to be dubbed.

1 Edit Socket

By connecting an Editing Controller (optional) to this socket as well as to a VCR equipped with Edit Socket, highly precise and speedy editing becomes possible.
(See page 59.)



Insert Editing

Insert Editing lets you replace pictures on a recorded tape with new scenes. (The original sound remains on the normal audio track.)

1 Press the [PLAY] Button.

2 Press the [PAUSE] Button.
- Play back the tape to locate the point where the Insert Editing is to finish, and press the Pause Button at that point.

3 Press the [RESET] Button.

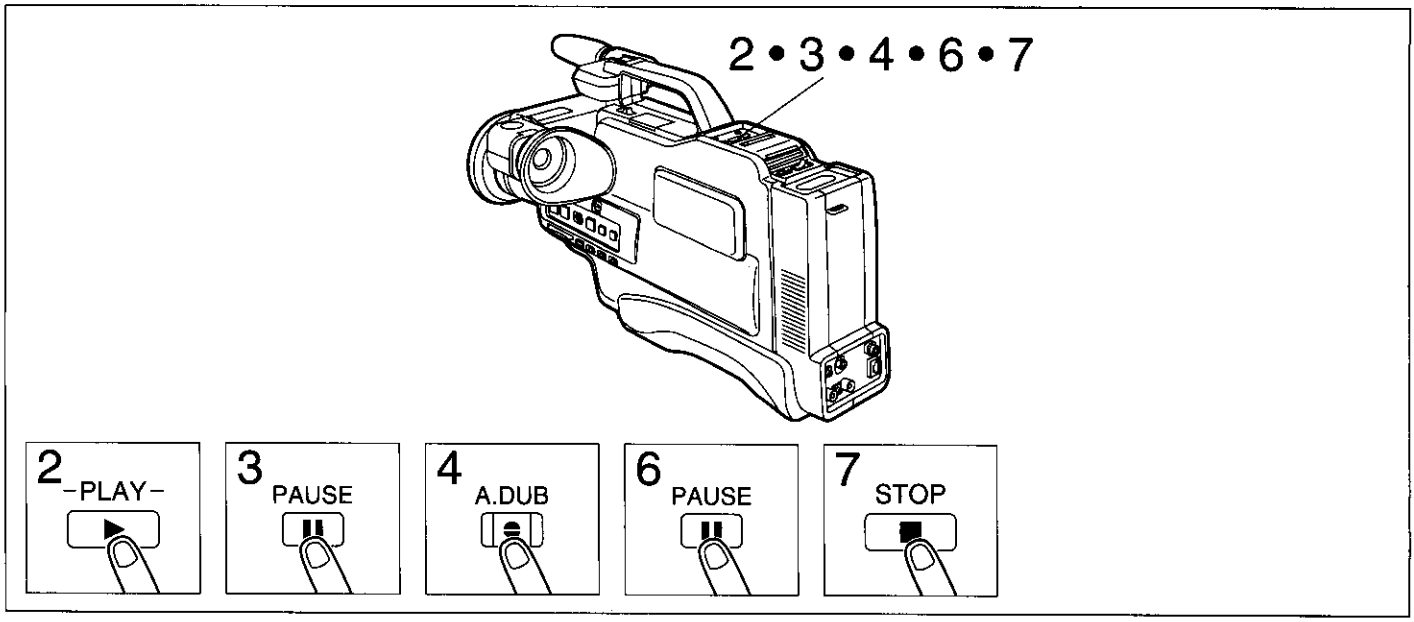
4 Press the [MEMORY/DISPLAY] Button.
- The indication "M 0000" appears in the Viewfinder.

5 Press the [REW/◀◀] Button.
- Rewind the tape to locate the point where the Insert Editing is to start, and release the button at that point.

6 Press the [INSERT] Button.
- The "INST ▮▮" Indication appears in the Viewfinder.

7 Press the [PAUSE] Button again.
- The Insert Editing starts.
- The "INST ▷" Indication appears in the Viewfinder.

The Insert Editing will automatically finish at the point where the counter indicates "M 0000".
- To stop the Insert Editing midway, press the Pause Button.



Audio Dubbing

Audio Dubbing can be performed by using the stereo microphone or an external microphone.

1 Insert the recorded cassette.
- Insert a video cassette with intact tab.
  If the tab is removed, cover the hole with adhesive tape.
  (See page 18.)

2 Press the [PLAY] Button.
- Play back the tape to locate the point where you want to start the Audio Dubbing.

3 Press the [PAUSE] Button.

4 Press the [A.DUB] Button.
- The "A.DUB ❚❚" Indication appears in the Viewfinder.

5 Operate the audio source unit.

6 Press the [PAUSE] Button again.
- The Audio Dubbing starts.
- The "A.DUB ▷" Indication appears in the Viewfinder.

7 Press the [STOP] Button.
- The Audio Dubbing stops.

Cautions

Please read these cautions before operating the Movie Camera and its accessories.

Video Head Clogging

The video heads are the means by which the Movie Camera places picture signals on the tape during recording, and reads picture signals from the tape during playback. If these heads become dirty and clogged from long use, the signals can no longer be recorded or played back correctly. This is the case, if the sound of a tape during playback is reproduced normally, but the picture is not visible or greatly distorted. When such symptoms occur, have the Movie Camera checked by qualified service personnel.
This Movie Camera is equipped with Head Clogging Detection Function. When the heads are clogged, the " ⊗ " Indication in the Viewfinder will appear. As the accumulation of dirt on the heads may be dislodged by the movement of the tape, it is possible that this indication sometimes appears, but may not reappear on the next recording start.
The Head Clogging Detection Function will be activated when the shooting is started from the shooting pause mode. However, it will not be activated when shooting immediately after replacing the cassette and after playing back some part of the tape.

If Condensation Forms Inside the Movie Camera

Condensation (dew) forms when warm air comes in contact with a cold object, for example on a window in a heated room in winter. Condensation may also form in the Movie Camera and damage the tape and the video heads, if:

- The Movie Camera is in a room where the heater has just been turned on.
- The Movie Camera is in a room with steam or high humidity.
- The Movie Camera is brought from cold surroundings into a well-heated room.
- The Movie Camera is suddenly brought from cool surroundings, such as an air-conditioned room or car, to a place which is hot and humid.
- When condensation has formed inside the Movie Camera, the "DEW" Indication in the Viewfinder will flash and a few seconds later, the Movie Camera will turn itself off to protect the tape and the video heads.
  After a while, turn the Movie Camera on again and make sure that the "DEW" Indication is not displayed any more. Then, wait about 1 hour before operating the Movie Camera again. Depending on the surrounding conditions, it may take several hours before the Movie Camera can be used again.
- As condensation forms gradually, it may take about 10–15 minutes before the Movie Camera turns itself off after a change of working environment.
- In an extremely cold place, condensation may freeze and turn into frost. In this case, it may take quite some time for the frost to melt, turn into dew and evaporate.
- When you bring the Movie Camera from a very cold place, e.g. the ski slopes, into a heated room, keep it in a tightly closed plastic bag or similar to prevent condensation from forming inside the Movie Camera.

Cautions for the Movie Camera

In case of abnormal operation of this unit (e.g. if it emits smoke or some unusual smell), immediately stop the operation and consult qualified service personnel.

■ Cautions for Use:

- Do not disassemble or reconstruct this unit. Some internal parts of this unit have high voltage. Disassembling or reconstructing is very dangerous and may cause serious damage to the unit.
- Never put any objects inside.
  Never insert any metal objects or inflammable material through any of the openings (cassette compartment, etc.). If any liquid is spilled into the unit, immediately stop the operation and consult qualified service personnel.
  Operating the unit with some foreign matter inside may cause malfunction or electric shock.
  If children have access to this unit, special attention should be paid to this point.
- Never aim the lens at the sun because this could cause permanent damage to the CCD image sensor. Such damage could manifest itself in reduced picture quality or could make shooting altogether impossible. Attention should be paid to this point not only during shooting but during other operations as well.
- Never subject the unit to strong vibrations or shocks.
  Shocks during use may result in picture distortion.
- Do not use this unit during a thunderstorm, especially not in a large open field, because this would be very dangerous.
  If used indoors during a thunderstorm, be sure to disconnect the AC Adaptor from the mains outlet.
- Never use this unit with the cassette compartment facing down, because this could cause uneven winding, slacking and damage to the tape.
- Do not use the viewfinder as a carrying handle when transporting the unit.

Cautions (cont'd)

■ **Cautions for Surroundings:**
- Do not use this unit in any place where water or some other liquid could splash on it.
- Do not operate this unit very near a TV set or radio, because this could negatively influence the picture and sound reception.
- Keep this unit away from areas with strong electric fields, because they could impair the proper functioning of this unit and cause picture distortion.
- Keep this unit away from objects emitting high temperature, such as heaters.
- Do not insert video cassettes into the unit or take them out from it in dusty places.
- It is not possible to use this unit in the water. If it is accidentally dropped into water (or some other liquid), disconnect it from the AC Adaptor, take it out of the water, and then consult qualified service personnel.

■ **Cautions for Connections:**
- Before connecting, confirm that all systems are turned off and that the connecting cables are not damaged.
- Do not expose the connection cables to high temperaturs, chemicals and objects with sharp edges; also do not bend the cables excessively.

■ **Cautions for Storage and Transportation:**
- Do not leave this unit in places exposed to direct sunlight (e.g. a closed car in summer) or near heaters. Excessive heat could deform the body or cause other damage to the unit.
- The packing materials in which the unit is shipped are designed for optimum protection. Keep them for transporting the unit in the future.
  Store the unit and video cassettes away from magnetized objects such as toys containing motors and batteries.
- Do not leave this unit in places with high temperature and high humidity such as in a closed car or in places with steam or oily smoke.
  If this unit is left in a damp place for a long time, mold could form on and damage the lens.
- Do not leave this unit in contact with rubber or plastic products for a long time, because it could cause deformation and discoloration of the body.

■ **After Use:**
- Be sure to attach the Lens Cap.
- When this unit is connected to the AC Adaptor, turn this unit off before unplugging the AC Adaptor.
- When this unit is not going to be used for a longer period of time, remove the cassette before turning this unit off.
- When the unit is not going to be used for a long period of time, turn the unit on occasionally to prevent malfunction.

Cautions for the Battery Pack

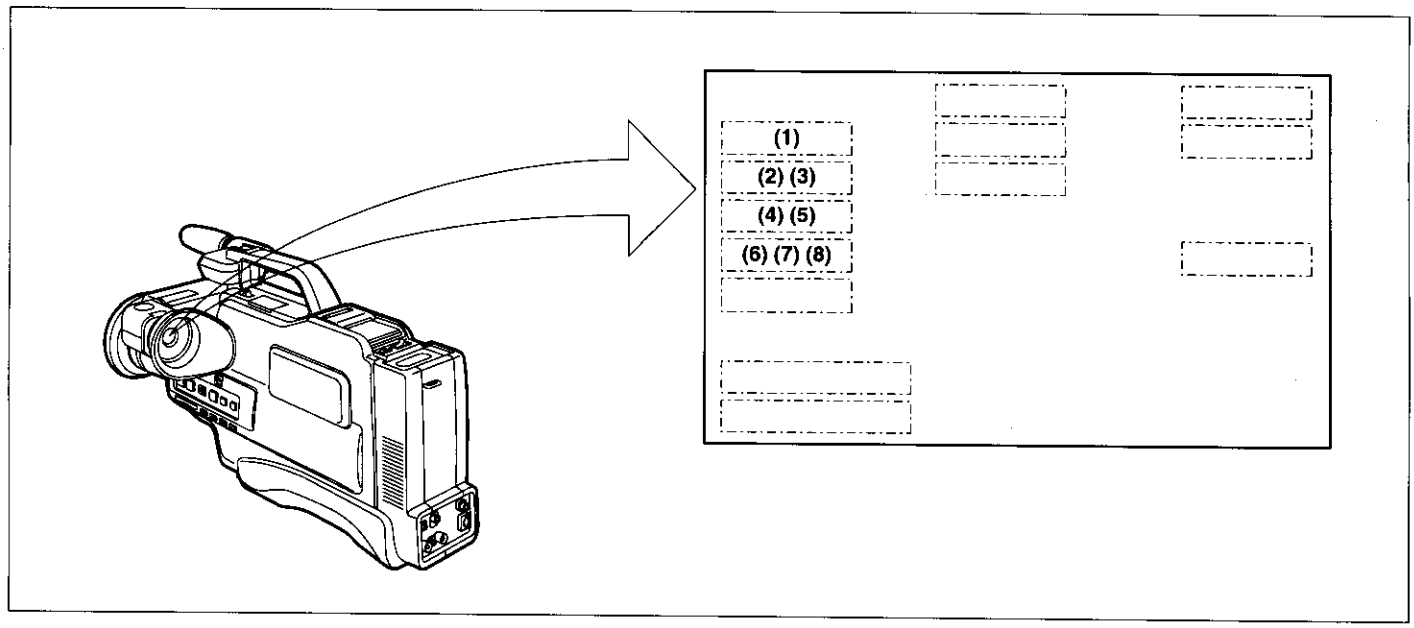
The function of the Battery Pack is based on a chemical reaction. Pay attention to the following points when using it.
- If charged at low temperatures, the operation time of the Battery Pack becomes shorter.
- For recharging, use the specially designed AC Adaptor only.
- Charge the Battery Pack within a temperature range of 10°C–35°C. At higher or lower temperatures, the Battery Pack cannot be charged to its full capacity.
- Do not recharge the Battery Pack when it is already fully charged.
- If, in spite of normal recharging, the operation time of the Battery Pack becomes too short for practical use, the service life of the Battery Pack has reached its end. Replace it with a new one.
- During operation of this unit or during recharging, the Battery Pack may become warm. However, this does not pose any problem.
- When the Battery Pack is not being used, remove it from the Movie Camera or the AC Adaptor.
- Do not short-circuit the connectors nor disassemble or reconstruct the Battery Pack.
- Do not throw the exhausted Battery Pack into a fire.

■ **Cautions for Storing the Battery Pack:**
- Do not store the Battery Pack in contact with metal objects because they could short-circuit the connectors of the Battery Pack and exhaust it.
- Do not leave the Battery Pack at places with high temperature, e.g. on the dashboard of a car or other places exposed to direct sunlight.

Cautions for the AC Adaptor

- Before connecting the AC Adaptor to an AC wall outlet, confirm that the voltage on the rating plate matches your local AC mains voltage.
- When not using the AC Adaptor, unplug its mains cable.
- Do not use the AC Adaptor for any purposes other than supplying the unit with power and charging the Battery Pack.
- When unplugging the mains cable, pull it by the plug, not by the cable.
- When listening to a radio while the AC Adaptor is in operation, the radio reception may be distorted. In this case, move the radio farther away from the AC Adaptor.
- Do not place any heavy objects on the AC Adaptor.
- Before cleaning the AC Adaptor, make sure that it is disconnected from the AC mains socket.

Be sure to obtain a warranty card from the shop at the time of purchase, and make sure that it contains all necessary information.



Indications in the Viewfinder

(1) Manual White Balance Indications
In the Manual White Balance Adjustment Mode:
"WB" Indication flashes slowly .....Adjustment is not made.
"WB" Indication flashes rapidly.....While adjustment is being performed.
"WB" Indication is lit .....The adjustment has been completed.
In the Automatic White Balance Adjustment Mode (initial mode): none of these indications is lit.

(2) Manual Mode Indication
"MNL"
When the [AUTO/MANUAL/LOW LIGHT] Mode Selector Switch is set to "MANUAL", the "MNL" Indication appears.

(3) Low Light Mode Indication
"LOW L"
When the [AUTO/MANUAL/LOW LIGHT] Mode Selector Switch is set to "LOW LIGHT", the "LOW L" Indication appears.

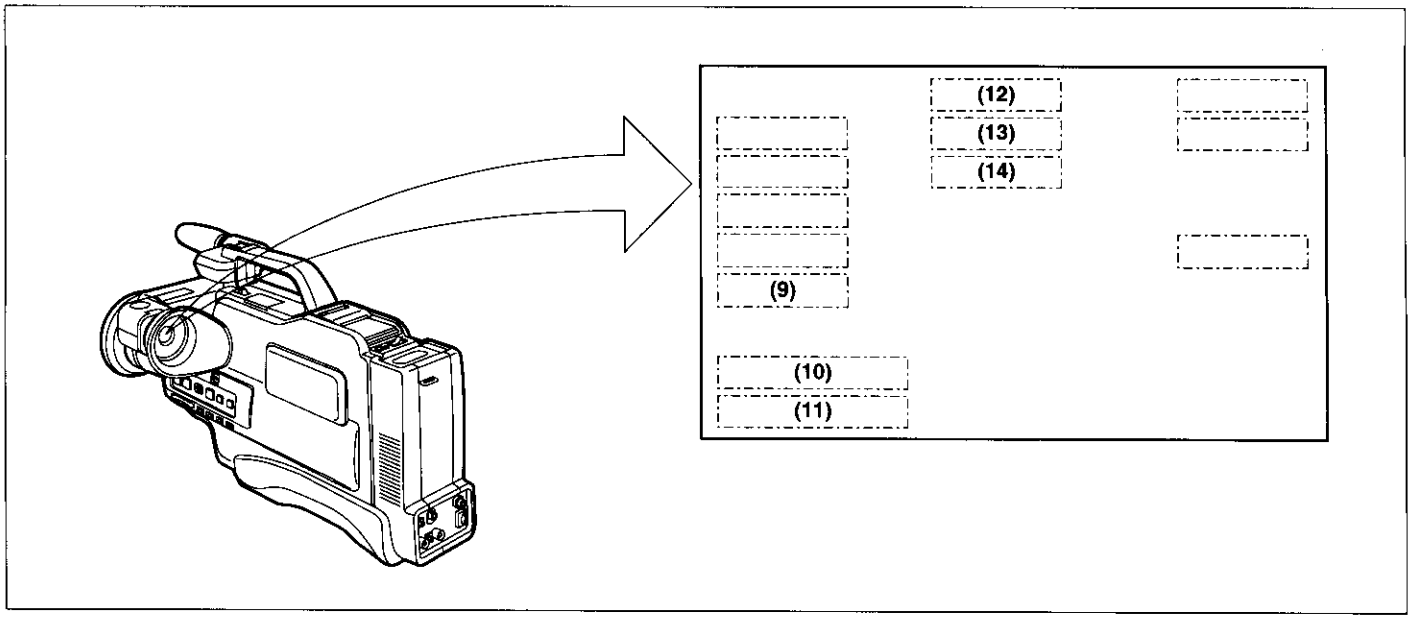
(4) Sports Mode Indication
"SPORTS"
When the [AUTO/MANUAL/LOW LIGHT] Mode Selector Switch is set to "MANUAL" and the [SPORTS] Button is pressed, the "SPORTS" Indication appears.

(5) Portrait Mode Indication
"P-RAIT"
When the [AUTO/MANUAL/LOW LIGHT] Mode Selector Switch is set to "MANUAL" and the [PORTRAIT] Button is pressed, the "P-RAIT" Indication appears.

(6) Digital Fade Indication
"D.FADE"
When the [DIGITAL] Switch is set to "ON" and the [D.FADE] Button is pressed, the "D.FADE" Indication appears.

(7) High Sensitivity Indication
"GAIN UP"
When the [DIGITAL] Switch is set to "ON" and the [GAIN-UP] Button is pressed, the "GAIN UP" Indication appears.

(8) Digital Wipe Indication
"D.WIPE"
When the [DIGITAL] Switch is set to "ON" and the [WIPE] Button is pressed, the "D.WIPE" Indication appears.



Indications in the Viewfinder (cont'd)

(9) Self-Timer and Interval Indications
At every press of the [TIMER/INTERVAL REC] Button, the indication changes in the following order:

→no indication→"SLF20"→"SLF"→"INT"

(10) Time Indication
"12:30"
- The current time (hour and minute) is displayed. The time must initially be set.
- The time is shown in the 24-hour clock system.
- It is possible to display the date alone, or the time and date together.

(11) Date Indication
"15.10.1996"
- The year, month, and day are displayed. The date must initially be set.

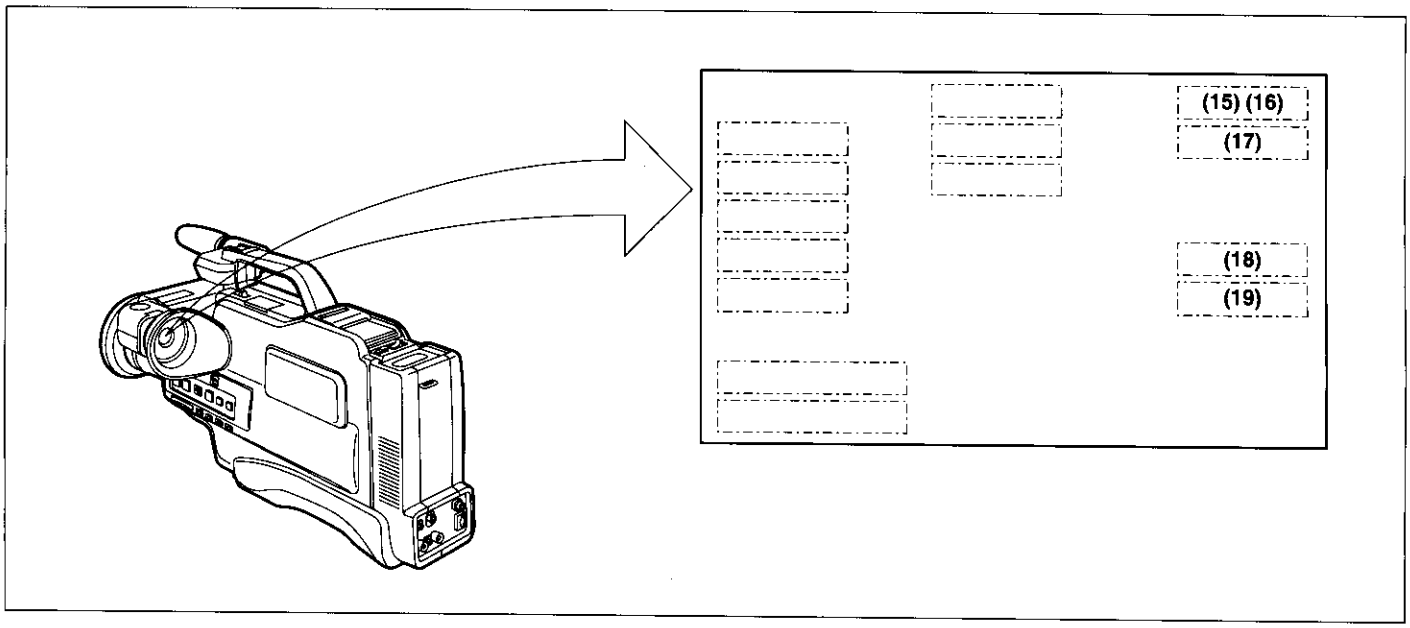
(12) Remaining Battery Power/Index Indication
"E----F"
- The "—" indications begin to disappear from right to left as the power of the Battery Pack is being used up.

"INDEX"
- This indication flashes when a recording is started and it indicates that an index signal is being recorded.

(13) Tape Counter/Elapsed Tape Time Indication
"M 0123"
- To be able to play back a certain scene at a later time, press the [MEMORY/DISPLAY] Button at the beginning of that scene. When the [⏩/FF] Button or the [REW/⏪] Button is later pressed, it is possible to easily locate this scene. ("M" means Memory.)

"L 0:00.00"
- The Lap Time Counter counts up only during recording.
- When a cassette tape is ejected, the tape counter is automatically reset to "L 0:00.00".

(14) Warning/Alarm Indications
The following indications are displayed to inform about the conditions of the Movie Camera.
"DEW", "⊗", "🔌", "📼", "📼" and "END".



Indications in the Viewfinder (cont'd)

(15) Tape Running Indications

Depending on the operation being currently performed by the Movie Camera, one of the following indications appears.

"▷"	During Playback
	Camera Search (in forward direction)
"❚❚"	During Still Playback
"◁◁"	Rewind/Review Mode
	Camera Search (in reverse direction)
"▷▷"	Fast Forward/Cue Mode
INST ▷	Insert Editing mode
INST ❚❚	Insert Editing Pause mode
A.DUB ▷	Audio Dubbing mode
A.DUB ❚❚	Audio Dubbing Pause mode

(16) Shooting Mode Indications

"REC"	During Shooting
"PAUSE"	During Shooting Pause
"CHK"	During Rec Review

(17) Magnification Ratio Indication

- It appears when the Movie Camera is turned on.

(18) Manual Focus Indication

"MF" ("MF" means Manual Focus.)
Pressing the [FOCUS] Button will turn the Automatic Focus Mode on or off. The "MF" Indication indicates that the Manual Focus Mode is selected.

- Initially, the Auto Focus Mode is selected ("MF" Indication is off).

(19) Digital Zoom Indication

"D.ZOOM" ("D" means Digital)
When the [DIGITAL] Switch is set to "ON" and the [DIGITAL ZOOM] Button is pressed, the "D.ZOOM" Indication appears.

Before Requesting Service

Power Source

Symptom	Cause	Action	Reference Pages
•When using the Battery Pack: Movie Camera does not turn on.	•Battery Pack is not attached.	•Attach it correctly.	11
	•Battery Pack is not charged.	•Charge it.	10
•When using the Battery Pack: Movie Camera turns off soon.	•Battery Pack is exhausted.	•Use a fully charged one.	10
	•Shooting was paused for more than 6 minutes.	•Slide the [POWER] Switch backward to turn the Movie Camera on.	22
•When using the AC Adaptor: Movie Camera does not turn on.	•AC Adaptor is not connected.	•Connect AC Adaptor correctly to Movie Camera.	12
•Movie Camera turns off soon.	•Dew has formed inside.	•Wait serveral hours.	50

Shooting

•No picture appears in the Viewfinder.	•Movie Camera does not turn on.	•Slide the [POWER] Switch backward to turn the Movie Camera on.	22
	•Lens Cap is attached.	•Remove it.	17
•Indications in the Viewfinder are not clear.	•Eyepiece Corrector is not adjusted.	•Adjust it.	15
	•Lens is covered with dust or dirt.	•Clean it.	16
•Shooting cannot be started.	•Tab of the inserted cassette is broken out.	•Cover the tab hole with adhesive tape.	18
	•No cassette is inserted.	•Insert a cassette with intact erasure prevention tab.	18
	•Tape has reached its end.	•Insert a new video cassette.	18
•Date and time cannot be recorded.	•Date and time are not set.	•Set the date and time.	13
•Date and time are not displayed in the Viewfinder.	•[DATE/TIME] Button was not pressed.	•Press the [DATE/TIME] Button	15

Playback

•No playback picture is reproduced.	•Movie Camera does not turn on.	•Slide the [POWER] Switch backward to turn the Movie Camera on.	42
	•Movie Camera is not connected to TV set or it is connected incorrectly.	•Connect Movie Camera to TV set correctly.	45
	•Wrong channel is selected on TV set.	•Select the correct channel.	—
•Picture contains noise bars.	•Cue, Review or Still Playback is being performed.	•This is not a malfunction.	44
•Picture is not in colour or distorted.	•Tracking is not adjusted.	•Adjust the tracking on the Movie Camera.	43

Specifications

VHS Movie — Information for your safety.

Power Source:	DC 12.0 V
Power Consumption:	Recording mode; 8.7 W (Battery Operation)
Tape Format:	VHS
Recording/Playback Time:	4 hours 20 minutes with E-260

VIDEO

Television System:	CCIR; 625 lines, 50 fields PAL colour signal
Output Level:	Video out (PHONO); 1.0 Vp-p, 75 ohm terminated

AUDIO

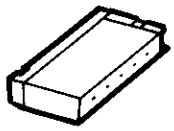
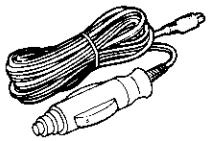
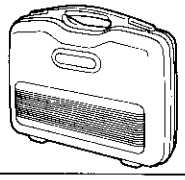
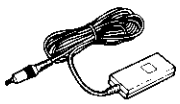
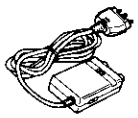
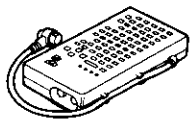
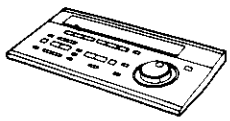
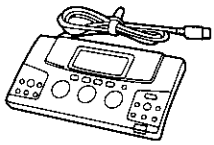
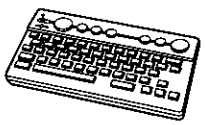
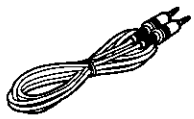
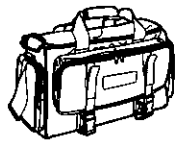
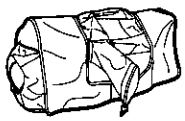
Output Level/Impedance:	Audio Out (PHONO); −6 dBV 47 kohm loaded/less than 1 kohm
	Earphone Jack (M3); [illegible] 8 ohm
Input Sensitivity/Impedance:	Mic In (M3); −70 dBV/4.7 kohm or more unbalanced
Audio Track:	1 track (Normal-Mono)
Image Sensor:	¼-inch CCD Image Sensor
Lens:	14:1 Wide-angle Power Zoom Lens (Optical capability) F1.4 Focal Length; 3.9–54.6 mm Digital AI Auto Focus/Auto Iris Filter Diameter; 49 mm
Viewfinder:	0.7-inch Electronic Viewfinder
Standard Illumination:	1,400 Lux
Minimum Required Illumination:	0.7 Lux (Low Light Mode)
Operating Temperature:	0°C–40°C
Operating Humidity:	10%–80%
Weight:	Approx. 2.7 kg (without Battery Pack)
Dimensions:	130 (W)×245 (H)×470 (D) mm

AC Adaptor — Information for your safety.

Power Source:	AC 100–240 V, 50–60 Hz (Automatic voltage adjustment)
Power Consumption:	44 W
DC Output:	DC 12 V 1.8 A (VHS Movie) DC 12 V 1.5 A (Battery pack charging)
Weight:	Approx. 620 g
Dimensions:	80 (W)×54 (H)×196 (D) mm

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

Optional Accessories

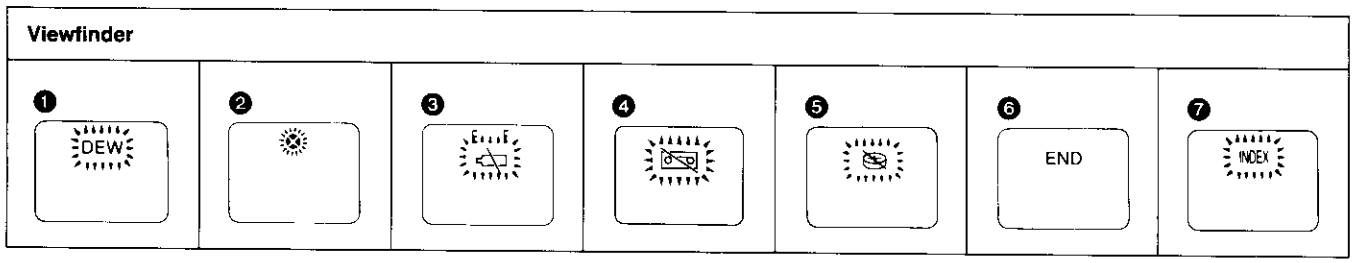
1. VW-VBF2E 	2. VW-ACM10E 	3. VW-SHM20E 	4. VW-LF49E	5. VW-LT2E
6. VZ-CT55E	7. VZ-CT75E	8. VW-RM1E 	9. VW-RF7E 	10. VW-CG5E 
11. VW-EC310E 	12. VW-EC1E 	13. VW-VT1A 	14. VW-K1E 	15. VW-SBF1E 
16. VW-RJF1E 				

1. Battery Pack
2. Car Battery Cord
3. System Case
4. Filter Kit
5. Tele Conversion Lens
6. Standard Tripod
7. Deluxe Tripod
8. Pause Remote Control
9. RF Adaptor
10. Character Generator
11. Editing Controller
12. Editing Controller
13. Video Titler
14. Synchro Cord
15. Soft Bag
16. Rain Jacket

Notes:

- Some accessories are not available in some countries.
- Before using the Character Generator (optional), make sure that a backup battery is inserted in it.

Warning/Alarm Indications in the Viewfinder



These indications are displayed in the Viewfinder to inform you about the conditions of the Movie Camera.

1. When condensation has formed inside the Movie Camera, the "DEW" Indication flashes and a few seconds later, the Movie Camera will turn itself off.
   Press the [TAPE EJECT] Button, remove the video cassette and wait until the "DEW" Indication disappears.

2. Video Head Clogging.
   Consult qualified service personnel.
   (See page 50.)

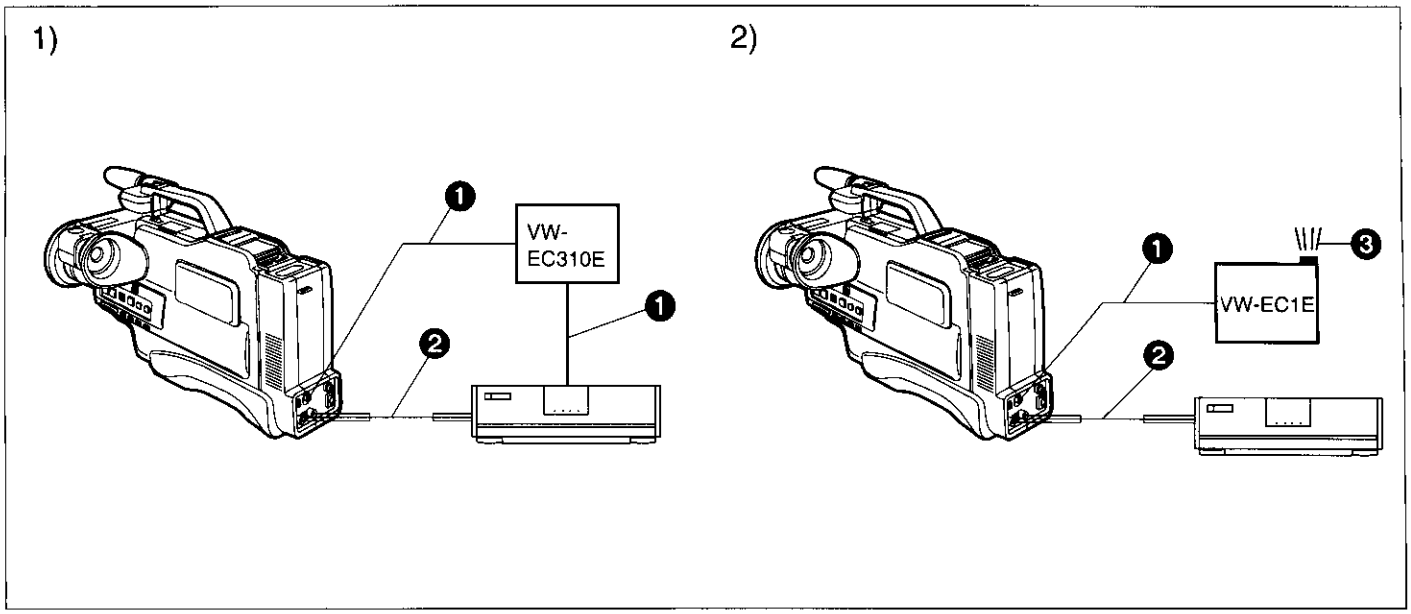
3. The "—" Indications begin to disappear one after another as the power of the Battery Pack weakens.
   When the last bar has disappeared, the Battery Indication "⊏" will flash.
   When a Battery Pack is inserted, this indication initially always shows "E----F", regardless of the Battery Pack's charging condition.

4. There is no video cassette inside, or the tab of the inserted video cassette is broken out.
   The indication flashes to warn that shooting is not possible. Insert a video cassette with intact tab. If the tab is broken out, seal the hole with adhesive tape.

5. When the Lithium Battery (for the Auto Date Function, etc.) is exhausted, this indication will flash for 10 seconds after the Movie Camera has been turned on.

6. During shooting: The tape has reached its end. Replace the video cassette with a new one whose tab is intact.

7. It appears few seconds while an index signal is being recorded.



ENGLISH

[EDIT] Socket

- The full instructions as written in the Operating Instructions of the Editing Controllers must be followed or the edit function may not operate correctly.
  This may not be a fault of the Movie Camera.

By connecting a Panasonic Editing Controller (optional) to this socket as well as to a Panasonic VCR equipped with Edit Socket, highly precise and speedy editing becomes possible.
The following types of Editing Controller or Editing System can be used with this Movie Camera.

❶ 5-pin Edit Cable

❷ Audio/Video Cable

❸ Infra-Red Remote Control Information

1) Connecting the Movie Camera to a Panasonic VCR equipped with 5-pin edit socket as the recording unit, using the Editing Controller VW-EC310E (optional).
   - This Editing Controller can be programmed for automatic editing of up to 8 scenes.
   - When using this Editing Controller, be sure to edit with the "Standard-Speed Mode".
2) Connecting the Movie Camera to any brand of VCR equipped with Infra-Red Remote Controller as the recording unit, using the Editing Controller VW-EC1E (optional).
   - This Editing Controller can be programmed for automatic editing of up to 4 scenes.
   - If the Movie Camera does not work correctly, turn it off, or disconnect and then reconnect the editing system again.

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